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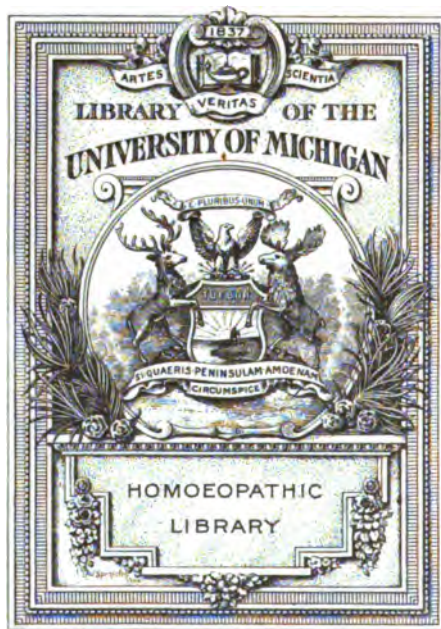
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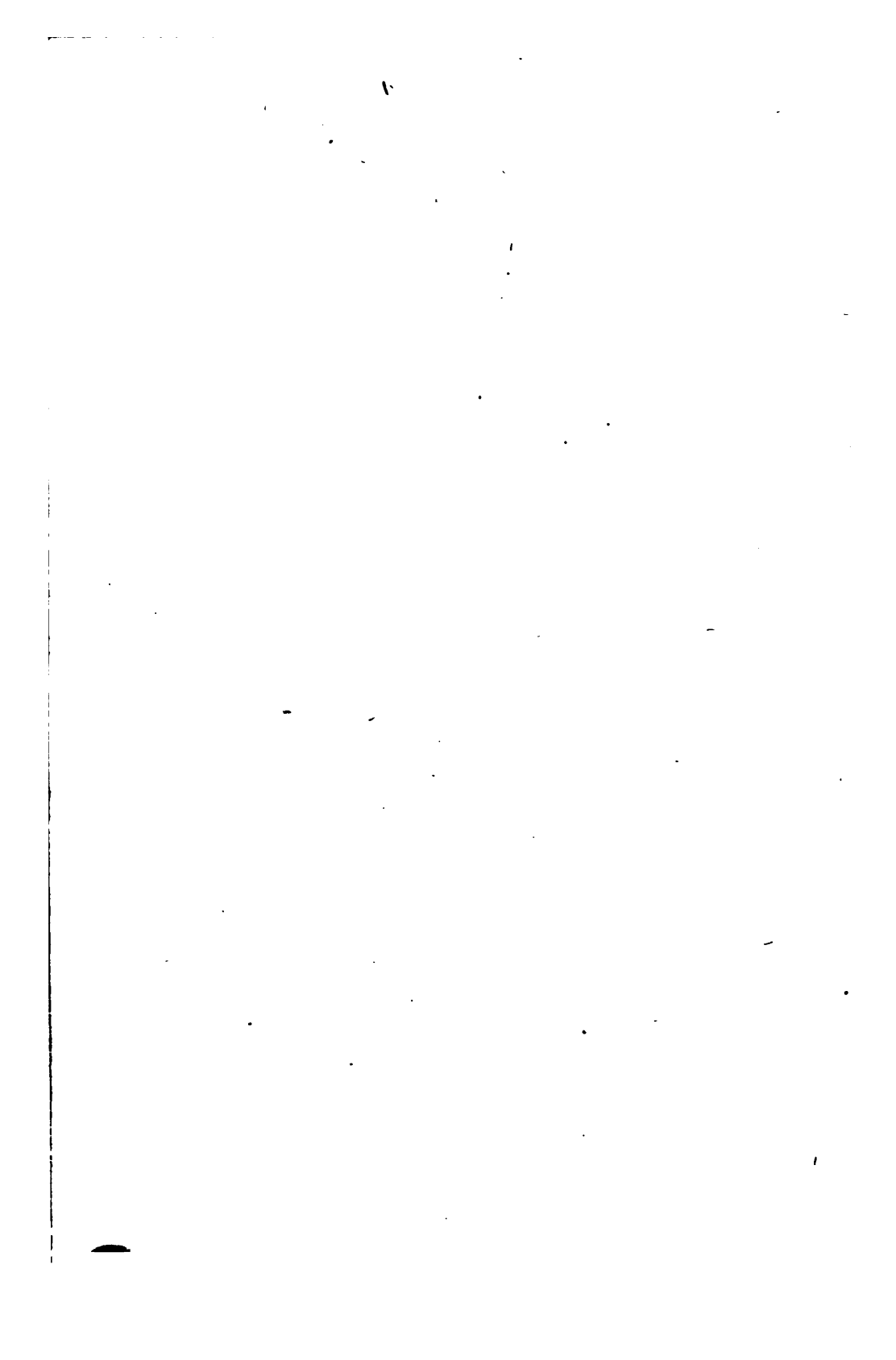
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THE PATHOGENETIC RECORD.

AN ARRANGEMENT OF THE
PATHOLOGICAL AND TOXICOLOGICAL
EFFECTS OF DRUGS,
COLLECTED FROM MEDICAL AND GENERAL LITERATURE.

BY

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A REPLY TO DR. JOSEPH KIDD'S 'LAWS OF
THERAPEUTICS'"; AND ONE OF THE
EDITORS OF "THE ORGANON."

VOL. I.

LONDON:
HENRY TURNER, 170, FLEET STREET.
1880.

P R E F A C E.

THE present collection is based upon the "Index to Cases of Poisoning" which I am publishing in the *Monthly Homœopathic Review*. All the medicines in this volume, except *Arsenic*, are complete up to date. Of this last I have still many references not yet copied out, but I have now no longer any time to repair to our great National Library for that purpose. I have, however, an immense amount of material still on hand, and in the future volumes will give it completed as far as possible under existing circumstances. This collection has already been made use of by Dr. T. F. Allen in his *Encyclopædia*, and I trust that it will prove of further use to workers, not only in the field of *Materia Medica*, but also in that of *Medical Jurisprudence*.

4, HIGHBURY NEW PARK,
LONDON, N. ;
Oct. 1st, 1880.

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PATHOGENETIC RECORD;

AN ARRANGEMENT OF THE

PHYSIOLOGICAL AND TOXICOLOGICAL EFFECTS OF DRUGS,

Collected from Medical and General Literature.

BY DR. E. W. BERRIDGE.

ALOES.

1. *Medico-Chirurgical Transactions* (London), 1867, vol. 1, p. 581.

The watery extract of *Aloes* was diluted with an equal quantity of distilled water, and the solution thus obtained was used for an injection. The subcutaneous injection of this fluid gave rise to considerable local tenderness and swelling, with general malaise and restlessness. No stool was produced till twenty-four hours had elapsed, when a scanty one was passed. The arm injected was swollen, tender and painful on motion, for three days after the operation.

2. *Ibid.*, 1852, vol. xxxv, p. 255.

To a young dog *Aloes* gr. iij was given twice, once fourteen hours and again two hours before he died. A curious circumstance happened before life was extinct. Strong inspiratory movements were going on, and when one of the large veins was wounded air rushed in in large quantities; immediately after this a loud systolic blowing murmur, audible at some distance from the body, commenced and continued for some time; it evidently was occasioned by the frothy condition of the blood expelled by the contraction of the ventricle. The liver was quite natural,

(APPENDIX B. J. H.)

a

moderately full of blood ; the gall bladder was moderately distended with yellowish bile. The whole length of the intestinal tract was tinged yellow by the bile which had flowed out ; the mucous membrane was nowhere injected, or showed a trace of irritation ; the epithelium remained attached. There was accumulation of oily matter in the central cells of the lobules of the liver ; it contained distinct whitish spots about the size of a pin's head. The cells were generally pale granular bodies, and did not contain more than a very little oil, nor had they any decided yellow tint. The ducts were very distinct, being rendered opaque by oily deposits between their nuclei. (By Dr. Handfield Jones.)

3. *London Medical Gazette*, 1850, vol. ii (vol. x of New Series), page 131.

A young pregnant woman was advised to take for rheumatism an aloetic mixture. She boiled three ounces of aloes in a pint of wine in an untinned saucepan, and let the mixture stand from evening until the following morning in the same vessel, and then drank a cupful. She was shortly afterwards seized with violent pain in the abdomen, nausea, vomiting, strangury, urgency to stool, tenesmus, tremors, and syncope. (Quoted from *Caspar's Wochenschrift*, August, 1849.)

4. *Ibid.*, 1837, vol. xix, p. 269. Remarks by Dr. Greenhow.

It evidently acts by irritating the mucous membranes of the intestines, and producing a larger secretion ; this is manifest from the large quantity of mucus often passed with the evacuations when aloetic aperients have been given. Lewis says "it occasions commonly great irritation about the anus, and sometimes discharge of blood" (in doses of $\frac{1}{4}$ drachm or 2 scruples) ; "in smaller doses, as ten or twelve grains repeated once or twice a day, it not only unloads the first passages, but attenuates and dissolves viscid humours in the remote parts, warms the habit, quickens the circulation, and promotes the menstrual and hæmorrhoidal fluxes ; its continued use renders the blood more sensibly fluid." Cullen says it empties the great intestines. I have known innumerable instances of persons who very constantly obtained this effect from one or two grains of *Aloes*. When administered in larger doses (than two to five grains) it is apt to cause griping, heat about the anus, and, if long continued, hæmorrhoids ; it also loses its effect of properly

emptying the large intestines, producing small frequent evacuations, consisting principally of mucus, and attended with tenesmus, the abdomen being at the same time distended and tender, the patient complaining that "his bowels feel as if scraped;" the pulse is sensibly quickened, and a sense of constriction is felt about the head. The long-continued use of aloetic aperients has a tendency to produce emaciation, and their action upon the bowels becomes capricious and uncertain, sometimes failing to produce any effect, and at others producing frequent small evacuations, as before described; the mucus being occasionally passed in long membranous bands, and sometimes in substances resembling pieces of flesh. I have also seen two cases in which the mucus passed along with the evacuations had all the appearance of fat. It is not difficult to conceive that such a state of irritation, kept up for any length of time, or frequently recurring, must ultimately tend to some organic change of structure; and I think it highly probable that stricture in the rectum may sometimes have its origin in this source, and I have seen cases of enteritis which I believed to be traceable to the inordinate use of *Aloes*. I have many times found that when *Squill*, along with other diuretics, failed to act, the addition of *Aloes* has speedily produced a copious diuresis.

DATURA STRAMONIUM.

1. *Asiatic Journal*, 2nd series, vol. xvi, 1835, part 2, p. 14.

About sixty persons took the seeds in food about midnight. Next morning all appeared in a state of intoxication and two died. (Quoted from *Meerut Observer*, July 10th. Our colleagues in India should endeavour to obtain the complete account of these cases.)

2. *London Medical Gazette*, 1834-5, vol. xv, p. 194. Case reported by Dr. E. W. Duffin.

On Saturday, 26th ult., my little daughter, aged two years and three months, called with her mother at the house of a friend, where it appears that the child whilst amusing herself swallowed unobserved some seeds of the *Datura Stramonium* that were lying on a side table to dry for garden use. The quantity eaten, or more properly swallowed, for there were none of them masticated,

was afterwards ascertained to exceed 100, and weighed about sixteen grains, as ascertained by subsequently weighing a similar number of seeds.

No symptoms of a nature sufficiently alarming to arrest particular attention presented themselves before the lapse of an hour, although on reflection the child had previously (indeed from within half an hour of having swallowed the seeds) evinced great irritability of temper, accompanied by general itching of the whole surface of the body, but more especially of the face, and conducted herself like a person slightly intoxicated. Her mother, ignorant of the cause of these indications, had regarded them simply as the effects of bad humour, and reproved her accordingly. To these succeeded flushed face, wildness of manner, suffused eyes, maniacal expression, ineffectual efforts to vomit, incoherent and rapid utterance, which very soon became wholly unintelligible; screaming, catching at imaginary objects in the air, or rather striking at them—for it was evident that these spectra were of a frightful nature, since at the moment of darting out the hand in the direction where the eyes were fixed, she always suddenly and with great vehemence withdrew herself, expressed the utmost terror in her look, and then hid her face; at the same time screaming and sobbing violently. Her eyes would to appearance follow the imaginary object for a moment or two, before she made the effort to escape from its supposed approach. She rapidly became furiously delirious, struck at, pinched, or attempted to *bite* every person who came near, or any object that was offered to her.

By 2.30 p.m., *i. e.* within a space of two and a half hours from the time that she must have swallowed the poison, the child had not only lost the power of utterance, but that of voice also. She could now only utter a hoarse croaking sound, attended with a sonorous croupy barking cough, and was unable to swallow in consequence of the violent spasm which affected the muscles of deglutition* when she made the effort. This state of spasm, judging from the nature of the cough and the croupy character of the inspirations, pervaded also the muscles of the larynx. She

* This symptom, conjoined with those enumerated, excited in my mind apprehensions of hydrophobia, until the matter ejected from the stomach by vomiting removed all doubt of their cause.

now knew no person, and had been wholly insensible to surrounding objects for above one hour and a half. The pupils were dilated, had been so from the first, and continued in this state till she died. The voluntary power of the extremities was gone, and the limbs were violently agitated by spasmodic twitching and jactitation (not by regular convulsions) alternately with short paroxysms of tetanic spasm (opisthotonos).

Notwithstanding all this active excitement, accompanied with hot and perspiring skin on the surface of the trunk, and flushed (slightly swollen) face, the pulse was almost imperceptible from the first; but as far as it could be felt it was natural in regard to velocity, and the inferior extremities were cold. Neither was there apparently any active determination of blood to the brain, if we may estimate this from the state of the anterior fontanelle, which was neither tense, hot, nor in the slightest degree raised by the cerebral pulsations; these, on the contrary, were scarcely perceptible.

In this condition, the severity of the symptoms undergoing occasional remissions of a few minutes' duration, she remained for about three hours, when a state of coma supervened, but she did not sleep, though at first somewhat so disposed. She still continued to be affected with convulsive twitching and jactitation of the limbs, alternated with short paroxysms of rapid vibratory spasmodic motions of the hands and forearms; of a peculiar, though, I believe, diagnostic nature, as regards the effects produced by poisons of this class. The muscles of the face were never affected by spasm, nor the expression of the countenance contorted in the slightest degree during the whole course of the operation of the poison.

The comatose state lasted about two hours; like the former it was attended with incapability of swallowing; but evidently the cause was of a totally opposite nature to that which had produced the same symptom in the first stage. It was now decidedly the result of atony or paralysis of those parts which had been formerly affected with spasm. A slightly stertorous state of the breathing indicated that a similar change had taken place in the muscles of the larynx. During the continuance of the coma the pulse returned, it was uncountably quick, and estimated to exceed 200, sharp, small, and thready; the respiration was extremely hurried averaging about 100 in a minute; each inspiration, how-

ever, completely filled the lungs. A tympanitic state of the bowels now proclaimed itself; the belly became extremely tense, and in consequence prevented me detecting another symptom that manifested itself on examining the body after death, viz., paralysis of the bladder and consequent incontinence of urine from repletion of that viscus. It need hardly be added that the evacuations were passed unconsciously, which added to the difficulty of detecting this symptom. At 1 a.m. there was a return of excitement, but not so severe as that which first presented itself; neither was it attended by ocular spectra or tetanic spasm; the respiration at one time exceeded 140 in a minute. At 8 a.m. on the Sunday morning she again became comparatively tranquil, and began to manifest symptoms of exhaustion, but was still affected with frequent twitching and the vibratory motions already described. In this state she continued, gradually becoming weaker, till noon, when she expired, exactly twenty-four hours from the time of swallowing the seeds.

Treatment.—As soon as it was surmised that the child had swallowed something of a deleterious nature, an emetic of *Ipecacuanha* and *Tartrate of Antimony* was administered, or rather forced down the throat; but this not appearing to be sufficiently powerful, it was followed up by one of *Sulphate of Zinc*. Such, however, was the effect of the poison on the sensibility of the stomach that repeated doses of both these emetics were given before vomiting could be produced. The state of spasm already alluded to in the pharynx likewise impeded materially a full ejection of the contents of the stomach; and together with the age of the child and the insoluble nature of the substance swallowed, rendered recourse to the stomach-pump inadvisable. In the course of two hours upwards of twenty seeds were dislodged, and as it was not probable that many more had been swallowed and the efforts to vomit were on the decline, a large dose of *Castor oil* was forced down the throat and an enema injected into the rectum. Both these remedies were several times repeated, and doses of *Calomel* and *Jalap* several times administered, before the bowels, which appeared to be equally as torpid as the stomach, could be moved. About 8 p.m. the means began to take effect and in the course of the night upwards of eighty more seeds were discharged by stool; the child also vomited repeatedly, but brought off no more seeds from the stomach.

During the comatose state cloths dipped in cold water were applied to the head and ten leeches to the temple; the child was also immersed in a warm bath. Dr. Thomson suggested that about a scruple of calcined *Magnesia* and four drops of *Liquor potassæ* should be given every half hour on the presumption that it might neutralise the specific operation of the poison, but nothing appeared to have the least influence in mitigating the symptoms.

Post-mortem inspection.—The natural appearance of the body externally was not at all changed; the countenance remained placid; the limbs more supple and pliant than usual; abdomen considerably swollen, tense, and tympanitic.

The scalp when divided was very exsanguineous; dura mater unusually adherent; arachnoid membrane perfectly transparent, somewhat more adherent to the pia mater than common, but not morbidly so; pia mater natural in every respect.

A medullary section of the brain might be said to present rather more red points than usual; this was observed more particularly on the left side, but not sufficiently to admit of being regarded as a morbid appearance. No effusion in the ventricles.

The blood was found to be semifluid throughout the body; the few coagula which were met with in the auricles of the heart and large veins were very feebly formed and easily broken down.

The medulla oblongata was divided very low down so as to afford an opportunity of judging of the condition of the spinal marrow, but nothing particular presented itself to notice.

The lungs were natural; the left ventricles of the heart were found empty; the parietes of the left side very hard and powerfully contracted; no coagula in the right. A slight unusual blush pervaded the pharynx and œsophagus to about one third their extent; but a very distinct band of vascularity about half an inch broad was formed at the junction of the tube with the pharynx; the larynx was similarly injected, but not quite in so marked a degree; the rima glottidis was thickened and very turgid. The gall bladder was distended; bile had transuded and was effused on the intestines. The stomach and intestines presented an extremely healthy appearance throughout; the peritoneal surface was rather paler than usual. Not a single seed was found in the whole extent of the canal. There was one

slight invagination of the jejunum, about half an inch in extent. The bladder was distended with urine.

The only appearances then meriting the appellation of morbid were those detected in the pharynx and larynx, and extending to the tubes proceeding from these.

3. *Lancet*, 1886-7, vol. ii, pp. 326-92. Lectures by G. Sigmond, M.D., containing quotations and original remarks.

Bergius (see original given below).

Störck slept in the room where he had expressed the juice from the fresh leaves; on waking in the morning he had an obtuse pain in the head; it did not prevent him, however, from following his usual occupation, and after breakfast this sensation left him.

Sir Philbert Vernatti says that the Chinamen formerly used *Datura* as a fermentation to a sort of drink much beloved by the soldiers and the mariners, called *suykerbier*, which makes them raging mad. I have seen divers soldiers and mariners fall into the rivers and ditches, being stupefied by their drink aforesaid, who were rather worse when they were taken out than before.

Swaine's case occurring at Brentford, quoted (see original).

Fowler's cases (ditto).

Hein has also given us an account of two infants, who, from a similar cause, had convulsions, sense of strangulation at the fauces, and hydrophobia.

Blancard also states a case of a girl, eighteen months old, in whom raving, biting, foaming at the mouth, and convulsions ensued.

‡ *Duffin's* case quoted (see original).

Bush's cases mentioned only; no quotation.

Bartram's cases quoted. In one case detailed in the *Transactions of the College of Physicians at Philadelphia* there was idiocy without fever; the child appeared very happy, talking and laughing, in constant motion; the pulse natural, the tongue clean, and no internal function except that of the brain disturbed.

There are instances in which idiocy is mentioned as the principal symptom developed. (Sigmond's own remark.)

Beverley.—Case quoted from his *History of Jamaica*, and given entire in C. Hering's *Materia Medica*, symptom 312.

Sigmond's own remark. (This case I afterwards found to be

by Orfila. See *Bulletins of the Faculty of Medicine of Paris*, 1819, No. 9.)—There was a very extraordinary case of its effects which occurred at Minorca. The case to which I allude was that of a lady who had suffered from intense periodical headache, which destroyed sleep, and rendered her totally unfit for any occupation; her health in other respects was unimpaired. Various remedies had been in vain tried, and at last a grain of an extract of *Stramonium* was given every successive morning for four days; as no relief followed, the dose was doubled on the fifth, and in about four hours afterwards symptoms of poisoning by *Stramonium* were developed. The face was of a purple-red colour, swollen; eyes prominent; pupils dilated; eyelids half closed, and vision nearly lost; hearing impaired; muscles of lower jaw, lips, right arm and leg convulsed; left side completely paralysed, and the intellect singularly disturbed; continual incoherent stammering, weeping, and other expressions of dreadful suffering; deglutition difficult, abdomen sore, pulse small and frequent; respiration tight and hurried; temperature natural; cold sweats confined to the paralysed part. Ten leeches were applied behind the ears, sinapisms to the feet, injection of common salt and vinegar administered, and vinegar and water given internally. The phenomena gradually subsided, the paralysed limbs began to execute slight movements; about midnight there came on another but less violent attack, which was relieved by antispasmodics; weakness and indistinct articulation only remained; the headache never recurred. In nine days the patient was completely restored.

Mash's case at Northampton, referred to (see original).

Greding has increased the dose of an extract from one grain to half a drachm in twenty-four hours in mania, and some of his patients in this disease have taken from twelve drachms to two ounces with no other effect than first producing tormina and then lax bowels.

Kæmpfer (see original below).

Garzia d' all'Horto, in his *Historia dei Simplici Aromatici*, states that in Malabar, when thieves intend to rob an individual, they drug his food with some of the flowers, which causes him to lose his senses, and to be seized with uncontrollable laughter, in which state he willingly submits to be pillaged.

Lindenstolfe's case referred to, but not quoted.

Gmelin, in *Geschicht. der Planzengifte*, gives a minute account of a case of poisoning by *Stramonium* given in coffee. Delirium, nymphomania, tremors, convulsions and tetanus were among the symptoms.

Sigmond's own remarks. Sometimes this poisoning where corporeal recovery has taken place has been followed by a total loss of reason. The Turkish females, when shut up in their monotonous seraglio, find opportunities of stupefying their husbands and of disordering their intellects, and of revenging themselves even before their very eyes by making them witness to their embraces of some favoured lover. (This last is quoted from *Lindenstolfe*).

Faber (see original below).

Murray, in *Apparatus Medicaminum*, is referred to, but not quoted.

Orfila's experiments mentioned. See his *Toxicology*.

Case of the *Duke de la Vauguyon* mentioned.

Sigmond's own remarks. I have in no instance found any bad effect from it, excepting a disordered state of vision, in which every object appears coloured with rainbow tints, which I have uniformly found to be a monitor of more untoward symptoms.

Dr. Begbie's remarks, quoted from the *Edinburgh Medical and Chirurgical Transactions*, 1824 (see original below).

Wendt's case referred to. The original is found in *Rust's Magazine*, vol. 24. *Bree's* observations (see original).

Duncan's remarks in his supplement to the *Edinburgh Dispensatory* quoted. In one instance no less than 158 grains of *Datura tatula* were taken in six days; it caused difficulty of deglutition, disturbed vision, loss of sleep, and general disorder of the nervous system. In another case 248 grains were taken in one day for neuralgia, and the same train of symptoms was the result.

In a third case it was impossible to give more than fifteen grains, as delirium and great agitation were produced.

Dr. Gibbs's case is erroneously quoted (see original below).

4. *Lancet*, 1836-7, vol. ii, pp. 819-21. Lecture by A. T. Thomson, M.D.

Beverly's remarks quoted. (See above.)

Thomson's case.—A man and his wife who were both rheumatic

consulted a druggist who recommended them to take an infusion of *Datura Stramonium*. A strong infusion was made, and the wife took a cupful of it on going into bed, and five minutes afterwards the husband took a similar quantity, and went to place himself in bed, when he found his wife powerfully agitated, making singular movements, her eyes fixed and staring, and unable to reply to the questions put to her. At that moment, as she afterwards related, she felt as if a fire had mounted to her head, and also affected her stomach. The husband became sick and vomited; after which he wished to go out to get assistance for his wife, but he had scarcely gained the door of the room ere he felt so enfeebled that his knees bent under him, and he was forced to sit down, but in a few seconds he fell senseless to the ground; on recovering he vomited repeatedly, was greatly agitated, became torpid, with a lethargic tendency, and lost for some time all sense of feeling. These symptoms continued eight hours with the husband and thirteen with the wife, and the latter was afterwards affected with gastric irritation which continued nearly a month.

Cases of *Sivaine* and *Mash*, quoted. (See originals.)

Thomson's case of poisoning by six grains of the extract. Dryness of the mouth and throat with difficulty of deglutition, the abdomen swelled and tender; the face swollen; the pupils dilated with loss of vision; the speech incoherent, owing chiefly to a convulsed condition of the lower jaw; the right side was paralysed. Gastric symptoms and severe cephalæa (? cephalalgia) remained for many days.

Cases of *Duffin* and *Heim* (? *Hein*) reported. They have been referred to before, but *Heim's* case differently quoted by the two reporters. The *original* must be examined. *Heim's* symptoms are here given as "drowsiness, great heat of body, furious delirium, swelling of abdomen, constriction of fauces, convulsions and hydrophobia."

Cases by *Kämpfer*, *Gmelin*, *Murray*, *Biglow*, mentioned, but not quoted.

5. *Lancet*, 1830-1, vol. ii, p. 560.

Case reported by Dr. James Mash, of Northampton.

H. G—, æt. 36, of delicate habit, swallowed by mistake two teacupfuls of the *Infusion of Stramonium* for *Senna tea*. About ten minutes afterwards she was seized with giddiness of the head,

dimness of sight and fainting. Her neighbours hearing a noise in her bedroom came to her assistance, and immediately applied to a druggist who sent a powerful emetic which did not produce sickness. Two hours after she had taken the liquid I saw her and found her quite insensible; pupils dilated and insensible to the stimulus of light; the whole muscles of the body convulsed, countenance flushed, and the pulse full and slower than natural. I immediately used the stomach-pump, and filled the stomach with large quantities of tepid water several times with the best effects. In a few hours afterwards, when I went to visit her a second time, I found her downstairs drinking her tea and quite cheerful. I should have stated that a common enema was administered which operated freely on the bowels. She has felt no ill effects since, except that her sight is not quite so good, and that her head feels lighter than normal.

6. *Lancet*, 1845, vol. i, p. 471. Spence's case quoted from *Boston Medical and Surgical Journal*. (See original.)

7. *Lancet*, 1847, vol. ii, p. 298. Reported by Dr. Robert Allan, Mauritius.

An Indian labourer named Hitoo was condemned by the Court of Assizes to ten years' hard labour in chains. He worked very unwillingly for about a month, and was brought into the prison infirmary on the 10th of February, 1846, in a state of insensibility, with stertorous breathing, dry black tongue, injected conjunctivæ, and dilated pupils, pulse ranging from 100 to 120. He was said to have eaten *Stramonium*, which grows where he was sent to work that morning, six and a half hours previously. The stomach-pump was applied, which brought up many entire seeds and fragments of seeds of the *Datura Stramonium*; but the action of the heart soon became more feeble and notwithstanding the administration of stimulants he continued to sink, and died an hour after admission, being about seven and a half hours after he was supposed to have taken the poison. The heart was felt beating several seconds after respiration had ceased.

The body was examined nineteen hours after death, at which time there were evident marks of commencing putrefaction (Fahrenheit's thermometer being 88°); it was muscular, five feet four inches in height, and about forty-five years of age.

Head.—Great turgescence of the integuments as well as of the dura mater, tunica arachnoides, and pia mater; brain firm and highly injected; the choroid plexus turgid, and the ventricles contained a little bloody serum; there was a small plate of bone deposited in the falx near the crista galli.

Chest.—Old ribbon-like adhesions between the pleura of left lung and that lining the cavity of the chest on the anterior part; the substance of both lungs very vascular in many parts; heart flaccid.

Abdomen.—Liver, spleen, pancreas, kidneys and bladder normal; the stomach contained about four ounces of ingesta, composed of rice, eighty-nine seeds of *Stramonium*, besides many fragments, pieces of manioc and tripe; there was a patch of extravasated blood the size of a shilling in the mucous coat of the larger curvature of this viscus, and a smaller patch of extravasation near the pyloric orifice; the whole mucous coat of the stomach was slightly congested; many entire seeds as well as fragments of seeds were also found throughout the entire length of the small intestines. About 6 ounces of urine were collected from the bladder at the post-mortem examination which I submitted to Ossian Henry's process for the detection of *Daturine*, namely, precipitation by infusion of gall-nuts (*Journal de Pharmacie*, Paris, tome xxi, p. 223, May, 1835). Several clear crystals were obtained, some being pentahedral, while others were surrounded with a quantity of oily matters, which obscured their shape. Some of these crystals were dissolved in distilled water, and the solution dropped into the eye of a man with lenticular cataract. In half an hour the pupil was visibly dilated, and became very much so in an hour afterwards. Dilute sulphuric acid was added to some of the product of Ossian Henry's process, and in a few days many acicular crystals of *Sulphate of Daturine* in tufts were observed.

8. *Lancet*, 1851, vol. i, p. 599. Reported by Dr. H. Parker Laurence, of Scinde.

On the evening of February 10th a prisoner was brought to the General Hospital from Bukkur fort, in the following state:—he was quite insensible to sound, seeming not to hear the loudest talk; rousing and shaking had no effect; his eyes were partially open, and the pupils more dilated than I have ever seen.

The stupor was of a drunken kind; there was no disposition to sleep, but a constant restlessness and turning of the body, attended by a most peculiar fidgety manner of twisting the fingers and catching at some imaginary object. This was varied now and then by grasping the bedclothes very tight; his body was warm, more from this exercise of the arms than any other perceptible cause; the tongue was always rolling; the pulse rather quick, and the patient often shrunk as if suffering from a creeping sensation over his body.

Nobody knows how or when he became so; but he was found in this state at 2 a.m. It was my belief that the man was under the influence of some vegetable poison. Accordingly a dose of seventeen grains of *Sulphate of Zinc* was given, followed by warm drinks, and wet cloths ordered to be kept to the head. The zinc having no effect, a second dose was given, a good scruple; this likewise failed. I then used the stomach-pump, but brought nothing from the stomach. After waiting a little time I gave fifteen grains of the *Sulphate of Copper*, and directed an enema to be used, and that mustard sinapisms be placed on the nape of the neck and some way down the spine.

11th.—In the same state; the emetic not acted, nor have the bowels been moved; the pulse very sharp and quick. Ordered *Ipecacuanha* powder, one scruple; *Potassio-tartrate of Antimony*, one grain, and an enema of *Sulphate of Magnesia* and warm water; vomited once and brought up several seeds of the *Datura*; bowels unmoved. I now bled him at the arm, taking away fully ten ounces of blood; ordered another enema of oil of turpentine, castor oil and tepid water; head to be shaved; cold applications thereto, and the emetic as before at 2 p.m. Evening: still insensible, bowels unmoved, slight sickness and more of the *Datura* seeds.

12th.—Bowels twice freely moved during the night, when several of the *Datura* seeds came away. To get demulcent drinks only. Evening: appears to be coming round, and takes a childish notice of signs, but unable to talk.

13th.—Is disposed to be very happy; laughs and talks incessantly; bowels open. Evening: has sobered down; quite sensible, and says that the seeds of some plant had been given him by another man, at his own request, as medicine.

9. *London Medical and Surgical Journal*, vol. viii, p. 704, December 26th, 1835.

No name is attached to this report. This is apparently editorial.

The thorn apple is a strong narcotic poison, producing vertigo, torpor, death. Dr. Barton mentions the cases of two British soldiers who ate it by mistake for the *Chenopodium album*; one became furious and ran about like a madman, and the other died with symptoms of genuine tetanus.

In one case (a patient of Dr. Barton), in which thirty grains were given for a dose, it dilated the pupil of one eye, and produced temporary paralysis of the eyelids. *Stramonium* smoke excites a sense of heat in the chest, followed by copious expectoration, and sometimes attended with temporary vertigo or drowsiness, and rarely nausea.

10. *London Medical and Surgical Journal*, 1836-7, vol. ii, November 26th, 1836, page 387.

Report by H. F. Clarke, of Winchelsea.

The next step was to deaden his natural acuteness. This was effected by changing his coffee, redolent of orange-flower water, for a decoction of the seeds of *Stramonium*, which puts a stop to thought, leaving the mind nearly a chaos, volition and sensation merely remaining, at the same time that it produces a kind of stupor of a highly pleasant nature. This was visible in the half-sleepy way in which he smoked his chibouque.

During the action of a decoction of *Stramonium* seeds I found the greatest difficulty in recalling the transactions of the previous day.

11. *Boston Medical and Surgical Journal*, 1831, vol. iii, p. 310. Copied, and possibly abridged, from a translation of Amelung's paper in *Bul. des Sc. Med.*, 1829. The original is in *Hufeland's Journal*, November, 1828.

According to Dr. Amelung, the first effect produced by the internal administration of *Stramonium* in small doses is a remarkable dryness of the mouth and throat. The voice becomes a little hoarse; the head is afterwards more or less affected, according to the dose that has been taken; the intellectual faculties become a little obtuse; there is a lassitude and weakness

of the limbs; though the patient does not experience any particular weakness; there is no disposition to sleep; nevertheless, the *Stramonium* produces agreeable dreams like *Opium*; in small doses it does not affect the appetite; in larger doses it diminishes it; the salivary and urinary secretions are augmented; by this latter effect the *Stramonium* approaches in properties the *Digitalis purpurea*; this analogy becomes stronger again by the sedative action that the *Stramonium* exercises on the sanguineous circulation. In a small dose the *Stramonium* augments at first, but its prolonged use diminishes the activity of the circulation; its effect is slower, but more certain than that of *Digitalis*; it does not disagree with the stomach, and does not produce so prompt a loss of muscular power; finally, its prolonged use does not produce so readily symptoms of poisoning as *Digitalis*. The great disposition to hæmorrhages which is observed in subjects poisoned by *Stramonium*, the very prompt putrefaction of their bodies, indicate a powerful depressing action on the vital powers, and authorise the arranging this article with *Digitalis* and *Hydrocyanic acid* in the class of those which considerably diminish the oxygenation of the blood.

12. *Boston Medical and Surgical Journal*, 1834, vol. ix, p. 10. Three cases reported by W——.

First case.—In the winter of 1825 I was called in the night to visit Mrs. S. R., who had been afflicted a few days with a severe cold, but who was suddenly affected on the night of my visit with very distressing and alarming symptoms. I found her in a state of extreme agitation, declaring that she should not live, that she had taken poison which would immediately destroy her life.

She was blind; the pupils were dilated to the utmost extent; her pulse was rapid so as scarcely to be counted, and very feeble. She had puked frequently; complained of pain and vertigo and great confusion in the head, faintness and indescribable anxiety at the stomach; was extremely restless, not at all disposed to sleep; her skin was cold and covered with sweat; countenance wild, exhibiting excessive anxiety and alarm; and, notwithstanding that her friends had made every effort to allay her fears, and satisfy her that she had taken nothing but herb tea, she still insisted that she had taken poison and should die.

Alarmed myself at her singular appearance and symptoms, I

inquired of her mother who was an experienced nurse what she had taken, and learned that she drank freely of a tea of *Coltsfoot* and *Liquorice*, the former having been gathered by the mother herself and carefully labelled, and the latter had the previous evening been procured of an apothecary.

Fearing that some narcotic poison had been accidentally mixed into the ingredients of which the tea was made, I gave an emetic which operated freely without affording relief. I then gave her twenty-five drops of *Laudanum* in a weak brandy sling every hour, till relief was procured; applied mustard paste to her stomach, warmth to her extremities, and gave her freely of warm aromatic drinks. After six hours of the most indescribable distress and frenzied delirium she fell asleep, and remained in quiet repose for some hours. When she woke she was calm; so blind as to be unable to distinguish one person from another; pupils of the eyes greatly dilated; she was very thirsty; tongue dry; vomited frequently through the day. Pulse was frequent and soft.

I was now satisfied that she was under the influence of *Stramonium*. As I could gain no information from the apothecary, I examined the bundle of *Coltsfoot*, and found it mixed with a considerable quantity of the leaves of the *Stramonium*, which solved the whole difficulty. The thirst, dilated pupil, and dimness of sight continued for some days, when my patient recovered.

CASE 2.—On the morning of June 24th, 1825, I was requested to visit Miss E. F.— who was represented to be in great distress and furiously deranged. When I arrived about 4 p.m., she had sunk into a state of complete insensibility, was unable to swallow any fluid, or to be aroused sufficiently to take the least notice of me or her friends. Previous to my arrival, she had been greatly excited and delirious. I found that the pupils were dilated; the skin cold and moist; pulse 120 in a minute, small and soft; her countenance pale; extremities cold, &c. Her mother informed me that being a little unwell, she had given her some lettuce and gold thread tea, which she took very reluctantly. This was taken at 11 a.m., five hours before my visit.

I immediately directed that compresses be wetted in oil of turpentine and applied to her limbs while covered so that rapid evaporation could not take place. An injection of the *Turpentine* with

sufficient *Laudanum* to retain it was thrown up the bowels. Volatiles were applied to the nose, and warmth and friction to the surface to excite the action of the skin. Not long after this course was adopted she was suddenly aroused; was highly delirious, nearly blind, thirsty, mouth very dry. Her pulse varied from 110 to 125, very soft and compressible. If she raised her head from the pillow she had vertigo, vomiting, and faintness. These symptoms satisfied me that she had taken some narcotic and probably *Stramonium*. I called for the cup of herb tea which was still standing, and found that *Stramonium* had been used instead of lettuce in making the tea. I gave her brandy and water, and every two hours twenty drops of *Laudanum* till the extreme distress and restlessness abated; when quiet sleep was restored, all danger was over, and she recovered very gradually.

CASE 3.—In October, 1825, I was called in great haste to see Mrs. W—, aged about forty, who was represented to be in a profound coma, having slept uninterruptedly all the afternoon and evening of that day.

Mrs. W— had just recovered from an attack of dysentery, of which disease two of her daughters were at this time seriously sick. When I visited the daughters in the morning, Mrs. W— informed me that she was seriously afflicted with piles which had followed her disease and were very painful, and she wished me to prescribe for her. I directed her to take one leaf of the *Datura Stramonium* as large as three of her fingers, and make a strong infusion, and take it as an injection. She prepared the remedy and administered it herself, no member of the family having any knowledge of it. When her husband returned from church he found her asleep in her bedroom. As she had had so little rest during the sickness of her daughters, he was gratified to find her so quietly reposing, and directed that she should not be waked to tea. Before bedtime, however, he became anxious at the length of time she slept, and attempted to arouse her. All his efforts were unavailing. She was perfectly comatose. Under these circumstances I was sent for. Recollecting my prescription for her in the morning, I hastened to the house and inquired if she had taken the injection. No person had any knowledge of it. Search being made, however, a vessel containing a large quantity of the leaves of *Stramonium* was found, from which, as I afterwards learnt, nearly a pint of strong infusion had been drained off and

taken as directed by injection, she not knowing that the plant was poisonous.

Her symptoms were of the most alarming character, and exhibited the operation of that dangerous narcotic to a greater degree than I had ever before seen. She was perfectly insensible as if dead, unless irritated by the harshest means; her pulse was 120 in a minute, small and soft; pupils fully dilated; tongue flabby and hanging out of mouth; surface pale and cold; respiration slow and irregular.

I gave her a wineglassful of *Oil of Turpentine* by injection, applied mustard and *Oil of Turpentine* to the surface; frictions, volatiles, &c.; put into her mouth frequently diluted brandy, *Spirit of Ammonia*, and other stimulants. It was many hours before she was effectually aroused. Before morning, by the most persevering efforts—pinching her, stinging with nettles, external heat, internal stimulants, and *Turpentine* injections—she revived and after a while was enabled to tell the story of her proceedings with the *Stramonium*. It was ten or twelve days before she entirely recovered from the symptoms produced by it. The piles were wholly cured, but, perhaps, the *Turpentine* injections had a share in the cure.

The effect of *Stramonium* on the pulse is different from that of most narcotics when pushed so far as to produce *ultimate narcosis*. I have almost universally found it increased in frequency, but not in power.

13. *Boston Medical and Surgical Journal*, 1837, vol xv, p. 60. Reported by Charles Hooker, M.D.

An Irish family was taken suddenly ill after eating a dinner of corned beef and boiled greens. The family consists of five persons, Mr. T—, his wife, and three children, the oldest about eight, the youngest about five years of age. I saw them about an hour after dinner, when the symptoms were immediately recognised as the effect of the *Datura*. The countenances had a wild idiotic expression, the pupils widely dilated, the sensorial functions perverted, and the muscular system subject to an irregular agitation somewhat resembling that of chorea. The appearance of the family was extremely ludicrous. The children were laughing, crying, singing, dancing, and playing all imaginable antic pranks. They had no correct estimation of distances or the size of

objects; were reaching their hands to catch hold of objects across the room, and again running against persons and things which they appeared to view as distant. The nailheads in the floor were pieces of money which they eagerly tried to pick up. A boy, apparently fancying himself undressed, caught a hat belonging to a student, thrust his foot into it, pulled with both hands on the brim, and began to fret that he could not "get on his trousers." The parents frequently called on the children to behave themselves; but their own actions being equally eccentric, they afforded a ridiculous exhibition of family government.

Sulphate of Zinc with *Ipécac.* brought from the stomach a large quantity of the *Datura* plant with other green vegetables; and under the use of *Camphor*, *Carb. Ammoniac*, and warm aromatic infusion, the narcotic symptoms soon subsided.

14. *Boston Medical and Surgical Journal*, 1855, vol. lii, p. 85.
An editorial communication.

Case mentioned which occurred in Oak Street, Boston. No symptoms given. Can any of our American colleagues ascertain the particulars?

The editor gives a case of poisoning by the leaves; the symptoms were nausea, pain, and stertorous breathing.

15. *Boston Medical and Surgical Journal*, 1856, vol. liv, p. 398. Reported by Dr. D. Calkins.

On the evening of November 25th, I was called to F. S—, a male child, aged four years, and was requested to be as quick as possible, as the messenger said the child was in spasms. I saw the child in about ten minutes after I was called. Found him in great distress; pulse 120; throwing his arms and limbs to and fro, and very restless; colour of skin a bright scarlet; pupils dilated. The scarlet colour extended over the face, body and limbs. I questioned his mother as to how he was taken; she replied that an hour before, he had been at play with the children, and came into the house and wanted some water; said his tongue felt big, and he appeared not to want much supper. She put him to bed as usual. He had not been in bed long, before attention was called to him by a scream as though he was frightened in his sleep. She found it impossible to do anything with him, and his father was called. As he inclined to be sick and to vomit, they gave him an infusion of snakeroot, which checked it.

He being no better as to other symptoms, a messenger was dispatched for me. From the appearance of the child, and the mother's history, I concluded it was a worm fit with stoppage of water, as his father told her he had often complained when urinating, and accordingly I gave him some simple remedies for the urinary trouble, with little or no effect. I then ordered injections, and at least twelve ounces were thrown up the rectum. After waiting one hour, and no movement of the bowels occurring, and the symptoms not much better, I came to the conclusion that there was a want of action from some cause, and accordingly gave powder of *Submur. Hydrarg.* gr. viij, *Pulv. Jal.*, gr. vj, M., at 9 o'clock; and left another powder of *Submur. Hydrarg.* gr. x, *Pulv. Jal.*, gr. viij, M., to be given at 1 o'clock if no movement took place from the bowels. No passage from the bowels taking place by 1 o'clock, and the symptoms being the same, the powder was given which caused full emesis and brought to light the cause of the trouble, viz. about a tablespoonful of the seeds of the *Datura Stramonium*. How the little fellow lived so long with them in him, it being about seven hours from the time I first saw him till he vomited them up, and how much longer they had been in him I know not. The medicinal dose is but half a grain. At the same time the vomiting commenced, the bowels passed off quite freely watery stools mixed with the seeds.

16. *Boston Medical and Surgical Journal*, 1862, vol. lxxv, p. 261. Reported by Dr. C. E. Buckingham.

L. G—, a boy about six years, was found standing at the back gate of his father's house at about 6 p.m. on Saturday afternoon. He was known to have gone away from home immediately after dinner, and had not been seen by his family afterwards. He staggered into the house, drank a cup of tea in the kitchen, and was carried upstairs, having said in reply to a question, "I don't care;" but these were all the words spoken by him till after midnight. I saw him a few minutes before 9 o'clock. He was sitting in a lady's lap, his right cheek against her breast. The whole surface was of a bright crimson, but the skin was not dry, and the redness disappeared on pressure, returning very rapidly.

His teeth and lips were separated. The tongue was very dry and its tip was curled up, but not touching the roof of the mouth.

Both pupils were fully dilated, the iris being scarcely perceptible. The respiration strongly stertorous. The pulse was rapid and feeble. Both sounds of heart were distinct. The abdomen was tympanitic.

The history, so far as could be made out, was that he had eaten bread and butter with tomato catsup for breakfast; had been at school in the morning; had taken a dinner of bread and butter with milk, and had gone away to play immediately afterwards. With whom or where he had been could not be discovered. His usual companions had not seen him. He had vomited just before I saw him a parcel of seeds, supposed to be tomato seeds. On comparison, however, there was an evident difference. The tomato seed was about the same size but balloon-shaped. These were, as described in the books, "small, kidney-shaped, flattened on the sides," and *white*, not of a dark brown, as the ripe *Stramonium* seeds are. Convinced that they were *Stramonium*, I gave him by the mouth about a scruple of *Ipecac.*, and as much more in half a pint of warm water as an enema.

When removing him to bed I noticed that his limbs, though flexed, were rigid. Soon after, by irritating him, he was made to move, but the power of motion was mostly confined to the right side. Within two hours his left side recovered its power. He did not vomit for two hours after taking the emetic, and then vomiting was much aided by putting the spoon down his throat. The enema came away in part while vomiting. Before this time his skin was losing its redness, and he was inclined to get up, but would fall asleep in the act of rising. As in one stupefied with opium, his waking was with a start, as though dreaming. He picked the bed clothes as one in the low stage of fever, and if the hand were held before his eyes he felt for it at varying distances. When pinched or tickled after 10 o'clock, he became very angry, and muttered incoherently, turning upon his face and kicking backwards with alternate movements of the feet. There was no strabismus throughout.

Dr. Ellis, with whom I left him at 11 p.m., reports that he gave him a grain of *Tartrate of Antimony* in four doses, in the course of the following hour. After each dose he vomited, but nothing came up except those white flat seeds. There was no bile at any time. About midnight there was a voluntary dejection. He was then moving about, apparently conscious, but could give no

account of himself. About that time Dr. Ellis gave him four grains of *Calomel* which were at once thrown up. The doctor left soon after, directing senna and salts in the morning. This dose operated twice in the morning. On Sunday, at 1 p.m., I saw him again. He was about house and came to the door. The pupils were still somewhat dilated, and he could not distinguish figures from letters. Otherwise he seemed well, except that he could not remember the names of the boys with whom he had been on Saturday afternoon. He must have vomited some 250 or 300 seeds. I think more than the latter number. There are sufficient and good accounts of *Stramonium* poisoning in Wood, Bache, and Christison.

(These authors should be referred to for our M.M.)

17. *Boston Medical and Surgical Journal*, 1862, vol. lxx, pp. 811. Reported by Dr. J. O. Harris.

I was called to see the patients, an Irish woman aged about 60, and two children aged 8 and 5 years respectively, about 10 p.m.; and on inquiry learned that the woman had at noon cooked a quantity of young stramonium plants—a part of the “mess” was shown me—for greens, and that all three had eaten of them. The time is so long since that I cannot recall all of the symptoms, but I remember distinctly that there was vomiting, cold, clammy perspiration, coldness of the extremities; small, infrequent, feeble, almost indistinct pulse; great pain in the region of the stomach and bowels; thirst, &c. Treatment restored the children, but the woman died next morning about 7 a.m., in a state of collapse, greatly resembling that of cholera.

18. *Guy's Hospital Reports*, third series, 1865, vol. xi, pp. 293-5. Reported by Alfred S. Taylor, M.D.

A student took about five or six grains of extract. “Two hours after having taken the poison my throat began to feel intensely dry, which increased to that state that I could not swallow, and with great difficulty breathe; my tongue felt quite spongy and totally devoid of moisture. The narcotic effect soon became evident, and I reeled as though intoxicated; the pupil of my eye was very dilated (even for thirty-six hours afterwards), and I was at one time nearly blind. I felt very nervous, excited and irritable, and continually paced up and down my room. The next

day I could scarcely see, and I was quite unable to read a book when I tried. For three weeks after I had a very sensible pulsation over my right eye, and even now I seem to feel the effects of the poison in my eyes, my sight being at times quite dim, though five weeks have elapsed. I was always relieved for a few seconds by imbibing any liquid. The serious effects lasted about eight hours."

Dr. Taylor adds some remarks from Charpentier's experiments, and from Bouchardat in *Annuaire de Thérapeutique*, 1864, p. 25. These should be referred to in the originals.

19. *Medical and Physical Journal*, 1811, vol. xxv, pp 377, 500; and vol. xxvi, p. 48. No name is attached to this paper; it is apparently editorial.

Storck's experiments quoted. (See above.)

Bergius.—"Odor recentis herbæ narcoticus, adeo fortis et afficiens, ut, cum plantam describerem, ex odore narcotico, et ex eo quod masticaveram folii frustum, temulentus quasi evaserim, haud secus ac si insuetus fumum tabaci hausissem."—*Mat. Med.*, i, 121.

Haller.—"Ex deterioribus plantis narcoticus est. Somnum facit adeo profundum, ut impune pudicitia puellæ violari possit, quæ hoc toxicum sumserit."—*Hist. Stirp. Indigen. Helvet.*

Sir Philbert Vernatti's remarks quoted. (See above). The original account is here stated to be given in *Spratt's Hist. Royal Society*.

Kämpfer, as quoted by Paller says:—"Deliria facit apud Indos grata equidem, reformata hactenus planta virosæ efficacia. Nam omnino *Stramonium* est Indorum *Datura*, confirmantibus Missionariis Danicis."

Haller states that it causes delirium, mania, convulsions, paralysis, cold sweats, vehement thirst, tremors. A man who took a decoction of the fruit was sad, speechless; he lost the use of his limbs, and at length became furiously mad. These effects, however, depend upon the dose. A small quantity occasions a pleasant kind of delirium which disposes a person to be very good natured, and willingly part with his property. (No reference is given to *Haller's* works; the last part of the above paragraph seems to be editorial.)?

Garcia d' all' Horto referred to, and a quotation from the

original Italian, given from his *Dell' Historia dei Simplici Aromat.* published in 1589.

Sauvages.—"Nuper Monspelii plures nefarii capti sunt, qui viatores expoliaverunt propinato vino, in quo semina *Daturæ Stramonii* contrita et infusa fuerant; fassus est autem eorum dux plures ex eo veneno interemptos esse, cum veram veneni dosim ignorabat, atque ea dosis nimia lethargum inducebat; dosis vero minor tantummodo paraphrosynem minime lethalem in bene multis, quorum aliquot ipse interrogavi, creaverat."—*Nosolog. Method.*, pars. ii, p. 320.

Faber (quoted from his work on *Strychnomania*). "Celebre autem est maleficio apud Indos, quando nimirum sive fœminæ maritis imposituræ zelotypia, decoctum *Daturæ* illis propinant, quo fit, ut apertis oculis consortium nequitiam et turpitudinem propriam insipientes, mente tamen turbati, cachinno tantum seipsos deludant, ac subsannatum morsus probent, cum,

Certant ingenio quisnam solertius instet

Aut vota lusum vertant in contrarium.

Dummodo commonstrant ficum prædulcibus uvis

Compressa qualem pollice efformat manus.

Aut miseri frontem pulsant resonante talitro

Unaque tractos capitis evellunt pilos.

Quo etiam modo servi nequam heris pocula solent infuere, ac palantium expilare thesauros, cujusmodi historiæ ludicræ pœnes authores leguntur citatos. Hujusmodi sine dubio fuerunt potiones illæ, quibus tres nebulones Augustæ Vindel. utebantur, ad inducendum hominibus vesaniam somnumque, securius post modum omnem substantiam eorum adportantes, quibus anno 1429, condignum præmium, furca, contigit."

Boerhaave in his *Hist. Plant. quæ in Horto Acad. Lugdun. Bat. crescent* says:—"Hæc utuntur meretrices Javanenses, dum a primariis sunt conductæ, tum hanc plantam maritis suis dant et delirii species subsequitur, unde coram maritis lasciviam utuntur, et si hæc planta in majori copia detur, stupidi manent, languent et tandem moriuntur. Hæc planta facit mirifice insanire et temulentiam conciliat; qui hanc plantam comederunt, oculis apertis respondent, sed nullius rei memores sunt, nec putant se ulla re interesse; hinc tali potu utuntur Indi principes ad suos rivales stupidos reddendos, adeoque imperio minus capaces tamen in vivis servant, ut populo tum possint ostendere."

Blancardus relates that a girl eighteen months old swallowed some seeds. In a short time she raved, striking everything, biting, and tearing the bystanders with her nails, treading on the feet of others, and foaming at the mouth; she presently died in horrid convulsions.

Kramer's case, from swallowing seeds of *Stramonium* and fennel mixed with sugar in spirits of wine. It occasioned violent delirium; the patient was cured by drinking vinegar in which pepper was infused.

Hein.—Two infants in consequence of swallowing some seeds, were affected with somnolency, burning heat of body, fury, swelling of the abdomen, convulsions, *strangulatio faucium*, hydrophobia. These symptoms were relieved by oleaginous remedies, milk, acid drinks, and clysters.

Editor's remarks.—In a fatal case where some seeds were found in the stomach of the patient, the vessels of the brain were turgid with blood, and extravasation had taken place.

Fowler's case quoted (see original).

Swaine's case (ditto).

Bergius says (*Materia Med.*, tom. i, p. 122):—"Decoctum à capsulis iii seminalibus *Daturæ*, in lacte coctis, hora 8 a.m. epotum, vertiginem subito fecit; subsequente aphonia, agrypnia, frequente blatteratione, extremitatibus truncoque corporis frigidis, pulsu exili, celeri. Hunc statum excepit paralysis apparens totius corporis per horas 7, quæ tandem in furorem abiit. Hora 10 vespertina ad se rediit æger, et tranquille dormivit per noctem."

Greding in Ludwig's *Adversaria Med. Pract.* One extract is already quoted; the others are as follows:—"Nulli autem plura pilularum exhibere potuisse; cum pleriquesumtis tribus vel quatuor ejusmodi pilulis de capitis obnubilatione, oculorum hebetudine, siti insignitis auctis et sat copiosa salivatione conquererentur quod a longe majore dosi extracti Vindobonensis in præcedentibus non observaram."

Again, "hi omnes enim pilula grani unius pondere, præsertim matutino tempore, vix deglutita, oculorum hebetudine plus minus gravi et binas horas ad minimum durante, adfligebantur ita, ut plerique tantum de oculorum caligine, ac si reticulo bombycino tecti essent, quidem de oculorum scintillatione rerumque oculis objectarum vacillatione; alii de visu, dupliciter quin et oblique res cernente, alius et quidam adolescens quindecim annorum de

presbyopia satis grave, et alius denique de solis, absentis licet, splendore, oculos graviter adficiēte, conquererentur. Temporaria vero hæc oculorum ægrotudo, intermisso *Stramonii* usu, statim quoque evanuit, ita, ut certo asseverare possim, neminem omnium postea oculorum quoddam incommodum retinuisse" (ditto).

In some instances the remedy occasioned shedding of tears, in others *lippitudo*; in some the head was affected with pain, and the faculties were stupefied; some were affected with ebriety, many with vertigo and some with swooning fits. The imagination in some was principally touched, in others every mental faculty; "immo mentis plenariam perturbationem diu post ejus usum et tres denique faciem aliquoties rubore suffusam expertos esse. Ex quibus omnibus tam peculiare *Stramonii* agendi vis in caput, quam etiam veritas vetustæ jam opinionis, mentem ejus usu perturbari posse, satis elucescit" (ditto).

Some of the patients were affected with extreme thirst, and dryness of the fauces, whilst in others a great flow of saliva was excited. The appetite during the use of *Stramonium* was generally good, and occasionally even keener than natural, though sometimes it was less. In several instances bilious vomiting was occasioned, and the bowels were frequently affected with diarrhoea, tormina and flatus. The secretions of perspiration and urine were promoted during its use. It also had much influence in provoking the catamenia; in one case they occurred after having stopped four years. In four women violent hiccup was observed, and in two a sense of itching over the whole body (ditto). Externally applied it is said to repel the milk from the breasts (*Editorial* remark).

Dr. Gibbs' case at Bath.—Patient was found sitting up with his head reclined on a sofa in a state of stupor. His recollection was impaired, and he seemed stunned and comatose. His pulse was scarcely to be felt, and there was no great force in the carotid artery. On enquiry into his case Dr. G— found that on the preceding evening the gentleman had been very much affected with shortness of breath, and that he had smoked *Stramonium*, the effect of which was that his breath became perfectly easy, but at the same time he had shown symptoms of stupor. He went to bed, passed a quiet night, and arose the next morning in the heavy comatose state in which Dr. G— found him on his arrival at the house. A large blister was applied to the back,

purgative medicines were administered, and the urine being deficient in quantity, a draught with squills and camphor mixture was ordered.

On the second day the blister had acted, the bowels had been open, and the urine in proper quantity and of a clear good colour. The mental faculties were somewhat recovered. The treatment was continued, and he was directed to take nourishment, having previously reduced himself very much with a view of alleviating the distress in his breathing.

On the third day his recollection was much better, his pulse perceptible, and some return of shortness of breath had occurred.

On the fourth day he suddenly expired after dinner either while sleeping or immediately on waking.

Dr. Bree's letter to the Editor follows. The following are extracts :

"The twenty-four patients who have been stated to have suffered injury from the smoking of *Stramonium* were all disordered in their breathing, and their dyspnoea at intervals assumed the form of convulsive asthma.

"Three persons experienced paralytic tremblings from smoking *Stramonium*. The pulse in each of these patients was so lowered that it became difficult to feel the beating of the artery.

"A patient had smoked the *Stramonium* a few times only and it affected her head with pain and confusion, and her stomach with sickness. She was next seized with an epileptic fit, the first she had ever experienced. This attack was followed by three more fits of the same kind at intervals of a few hours, and she became nearly insensible. The cough left her, the pulse became scarcely perceptible, and her mind was no longer capable of exertion. She was not wholly unconscious of her state, but stupor and somnolency overpowered the little energy she had, and her stools and urine passed involuntarily.

"Four patients smoked *Stramonium*. After some days' experience of this practice, one of them was still capable of coughing, but with so much pain of his head as to indicate immediate danger. Of two other patients who smoked *Stramonium* pneumonic inflammation affected one, and intolerable headache with dimness of sight attacked the other."

Dr. Gooch's cases.—In one patient smoking caused giddiness,

20. *Edinburgh Medical and Surgical Journal*, 1819, vol. xv, p. 154. Reported by Thomas Young, M.D.

A boy between two and three years old, ate a whole apple of the *Stramonium*, and it was nearly two hours before the fact was ascertained. A peculiar wildness of the look with general suffusion, and some convulsion was observed.

21. *Edinburgh Medical and Surgical Journal*, 1820, vol. xvi, p. 155. Reported by Dr. Benjamin Granger.

A girl about two and a half years old lately died from eating unripe thorn-apple. The child ate it between 5 and 6 p.m. on an empty stomach, but the quantity taken could not be ascertained. About 6 p.m. she was observed to stagger and appeared as if intoxicated. At 8.30 p.m. the symptoms were complete insensibility, dilatation of pupils, swelling of the under lip, voluntary muscles in a state of great relaxation, respiration hurried, the extremities cold, and the pulse little or none perceptible. The torpor gave place at irregular intervals to severe convulsive fits, during which the child shrieked violently, and the voice was particularly hoarse. Full vomiting was excited, and a considerable quantity of *Stramonium* was thus dislodged from the stomach, but without any return of consciousness, or any abatement of the symptoms. At 1 a.m. the paroxysms of excitement of the brain which had produced the convulsions had ceased to recur, and the jaw had become locked. At 8 a.m. pulse 160, strong and regular; heat of whole surface great; eyes half closed and lifeless. At 11 a.m. pulse 120, unequal and intermitting. The child lived till 3 p.m. On opening the body a large quantity of thorn-apple was found in the ileum; some of it in pieces that admitted being felt through the coats of the intestines, but the greater part in a state of minute division. A great part of the poisonous substance was intimately blended with the fluid secretions in the intestines, but as much of it as could be got away separately weighed nearly half an ounce. In the stomach only one particle of *Stramonium* remained, and none in the duodenum or jejunum. The bladder was distended, the blood-vessels of the pia mater remarkably loaded, and more water than usual in the ventricles of the brain.

22. *Edinburgh Medical and Surgical Journal*, 1833, vol. xxxix, pp. 377-83. Reported by John Davie Morris, M.D.

Experiment 1.—Six drachms of an acid solution, prepared from twenty grains of the oil of *Stramonium*, were given to a rabbit. In two minutes the animal was obviously affected; in five and a half minutes it fell on its side and could not rise, though it made violent and repeated efforts to do so. In thirteen minutes it was seized with convulsive stretching, and severe tremors of the limbs, accompanied by reflexion of the head; in fifteen with violent convulsions, succeeded by laborious breathing and total insensibility. It died in nineteen and a half minutes. The heart continued to contract for seventeen minutes after death.

Experiment 2.—The oil from which the solution was prepared was given to a rabbit and caused vertigo.

23. *Medical Repository*, 1800, vol. i, p. 541. Review of *A Dissertation (Inaugural) on the Properties and Effects of Datura Stramonium, or Common Thorn-Apple, and on its Use in Medicine*. By Samuel Cooper, Philadelphia. Samuel H. Smith, 8vo, pp. 58. 1797. This work should be examined.

24. *Boston Medical and Surgical Journal*. 1845, vol. xxxi, p. 361. Reported by Dr. Spence.

Thursday evening, November 10th, 1844, 10.15 p.m., was called to visit three women who were said to be in a dangerous condition from the use of some article that they had taken in the course of that evening. It was soon ascertained that they had steeped, as they supposed, about half an ounce of horehound in a pint of water for a slight cold, but the herb proved to be *Stramonium*, and they had each of them taken a portion of this infusion.

M. L.— was upwards of 60, previous health feeble and delicate. J. L.—, age about 80, constitution good. E. B.—, upwards of 80, naturally of a very vigorous constitution, had suffered lately from bronchitis but was now convalescent.

Appearances.—They lie in bed stupid, with a muttering delirium, unable to articulate a single word. There is a certain and peculiar wildness of countenance. Their faces are flushed; pupils much dilated; conjunctivæ highly injected, with a total insensibility of pupils. Lips and tongue parched; no vomiting; breathing at times stertorous and laboured. Hands cold, with a trembling and slightly convulsive movement. Great rigidity of

the muscles of the back and neck. At times active attempts at utterance. For the space of three hours at intervals various antidotes were resorted to, as *Ipec.* combined with *Sulph. Zinc*, *Tartarised Antimony*, *Sulphate of Copper*, mustard and water, *Sal aratus* and vinegar, and draughts of warm water, tickling of the fauces, &c. The various combinations employed produced but little effect. Stimulants were then substituted, as a solution of *Carbonate of Antimony*, a strong injection of green tea, &c. apparently with some beneficial effect. Their use was continued at intervals.

CASE 1.—M. L—, Friday, 3 a.m. There is a decided improvement; can raise herself in bed, but mutters; 9 a.m., is conscious, though there is a wildness in her look; pupils dilated; talks at times coherently and then wanders. A purgative was ordered each patient. *Saturday morning*, complains of soreness of the throat and fauces. Has a loose rattling cough, with some expectoration. Mucilaginous drinks were ordered. She continued to droop gradually, and died apparently without suffering the following morning.

CASE 2.—J. L— could sit up, but was unable to stand, and resembled one intoxicated. Her symptoms were somewhat of an hysterical character. *Friday*, 3 a.m., is conscious, speaks distinctly, and seems aware of her condition; 6 a.m., pupils continue dilated. *Saturday morning*, well. An incident in her case is perhaps worthy of remark. She is a seamstress by trade, and is much occupied in sewing. At times, when under the influence of the poison, would seem to herself to be engaged in her usual avocation, and then would thread the needle, tie the knot at the end, and imitate in every respect the routine of procedure of one thus engaged.

CASE 3.—E. B— drank the most freely. The wildness of countenance in her case was very striking and almost startling. Pupils very much dilated, and almost insensible. *Friday*, 3 a.m., but little if any improvement; 9 a.m., is conscious though the wildness continues. Pupils considerably dilated, is much excited, talks thickly, and articulates with difficulty. *Saturday morning*, is better, though complains of great soreness and dryness of throat. Has improved slowly since then. Has at present some hoarseness of voice and cough, for which she is under treatment.

References also made to Wood and Bache (U. S. Dispensatory), Pereira, Orfila, and Christison ; for which see originals.

25. *Medical Repository* 1800, vol. 2, p. 27. Two cases reported by Dr. Dewitt.

CASE 1.—On July 28rd, 1797 at 11 p.m. I was called in great haste to visit a child of Mr. S—, aged about two years, suddenly attacked, and said to be dangerously ill. When I arrived I found her apparently in the greatest agony, with a high fever, and burning heat and redness of the skin, attended with an itching eruption over the whole face and trunk of the body, but her feet and legs were paler and cooler than natural, her countenance appeared suffused and bloated, the pupils of the eyes were greatly dilated, the tongue furred and dry, pulse weak and so frequent as hardly to be counted. She had an incessant hiccup, and frequent ineffectual retchings to vomit. Sometimes she would appear for a moment to be relieved from her anxiety, and sit silent with her eyes fixed on the ground as if absorbed in contemplation, whilst her hands were employed in picking at her clothes, or anything that happened to be before her, similar to those in the last stage of some fevers. Then again she would start involuntarily, quick as if a shock of electricity had passed through her body, with an air of affright and a loud shriek ; her limbs writhed with convulsive motions and her countenance and body distorted in every direction, apparently affected with great pain and anxiety. At other times in her intervals of ease, she would sing and sometimes laugh, but could not be made to utter a word, neither did she appear to take notice of anything that was said to her. In short, the functions of her mind appeared to be entirely deranged. These paroxysms occurred at irregular intervals of five or ten minutes, and continued about the same period. She manifested great aversion to fluids of every kind. When a cup of water was brought to her lips she would instantly start from it, and sometimes relapse into her paroxysm ; so great was her aversion, that it was with the utmost difficulty a teaspoonful of any fluid could be forced down her throat. On particular enquiry I found that she had been in the garden that afternoon, and some of her playmates had observed her to take some seeds in her mouth, which from a specimen brought me proved to be the thorn-apple's. I exhibited an emetic, composed of three grains

of *Tart. Antimon.* in divided portions at short intervals, judging that a less powerful one would be quite ineffectual to produce full vomiting while she laboured under the violent operation of *Stramonium*. When it operated she brought up a tablespoonful or more of the unripe seeds, and diffused the rank smell of that plant over the whole house. After this the child appeared to be better and easier; her pulse became somewhat stronger and slower, and her skin a little cooler.

24th.—At daybreak I found her in a stupor, from which she could with great difficulty be roused, resembling a person in the highest stage of intoxication from spirituous liquors. She had frequent startings and twitchings of the limbs; her pulse was fuller, stronger, and slower than last evening; skin a little cooler; feet warmer; eruption stationary. I ordered a dose of *Castor oil* to be administered immediately. Towards evening the oil had operated; she had somewhat recovered; stupor diminished; pupils of her eyes not quite so much dilated; eruption not so red; she looked sullen and fretful.

25th.—Slept well last night; has recovered rapidly, but is much debilitated; staggers a little when she walks; skin nearly of its natural colour, but rough and dry; pupils of the eyes contracted to nearly their natural dimensions; eyelids swelled, and face rather bloated. At 12 o'clock was attacked with a high fever, a slight return of the eruption, and much disposed to sleep. She now became thirsty, and inclined to drink; directed to use lemonade. The pupils of her eyes were now contracted more than natural. Ordered repetition of *Ol. ricini*.

26th.—Fever continues; pulse preternaturally tense. I administered a more powerful cathartic.

27th.—Purgative had operated well; brought away a large quantity of greenish fæces; no fever; pulse natural.

28th.—Observed a great many vesications on her skin, filled with a pellucid fluid; they were extremely numerous and very small, many of them not larger than a pin's head, covering her whole face and trunk of her body. Ordered a continuation of the laxatives, and the lemon juice for common drink.

29th.—She recovered strength fast; plays about the house; appetite increases; vesications drying up.

CASE II.—A young married woman had taken a decoction of more than a tablespoonful of the dried seeds as a cure for some

trifling complaint. Shortly after, she was seized with a delirium, her tongue furred; her cheeks flushed; skin warm, and her pulse full and tense. I immediately administered six grains of *Tart. Antimon.* in divided portions. Three hours afterwards the emetic had operated but little. She was now in a furious mania, requiring several persons to hold her. She passed large quantities of urine involuntarily as she walked over the floor. Pulse quick and tense; directed venesection to fifteen ounces, and administered a brisk cathartic. In two or three days she entirely recovered, without the least recollection of anything that had happened during her illness.

Dr. Dewitt proceeds to make some observations, in which we find the following additional symptoms as belonging to the *first* case, though not particularly described there,—“Depressed eyebrows, and distorted mouth; restless condition, and violent shrieks.”

Dr. Lobstein's case in Medical Transactions is mentioned.

26. *Medical Repository*, 1800, vol. ii, p. 82. By Dr. Alexander King.

The operation of this medicine, when taken in small doses, is moderately diuretic, and impregnates the urine pretty sensibly with the smell of the seeds. It is cooling, anodyne, and sedative. It relaxes the tone of the solids, lessens the contractile force of the arterial system, and consequently modifies the violent attrition of the circulating fluids against their containing vessels, lowers the pulsation of the arteries, and renders the pulse slower, more uniform and equable, when excited by violent stimuli. If taken in large doses it produces the following symptoms:—The first sensible effect is in the sight; there appears a preternatural dilatation of the pupil of the eye; vision is rendered indistinct and confused, objects appear multiplied, diversified, and variously coloured; the patient complains that he does not see clearly; he cannot discern a small object, such, for instance, as the point of a pin or needle; he sees objects in the room which do not exist, and complains of a numbness of the head, attended with vertigo. It also affects the organs of speech. He falters in pronunciation; his tongue is rendered paralytic, or when he tries to put it out imitates the motions of a person who tries to do the same in a nervous fever. The whole nervous system is disordered;

various parts of the body become paralytic. From the senses it extends its influence to the mental faculties. The imagination is confused, and disturbed with fear. Terrifying apprehensions perplex the mind, and impress on the countenance the image of this passion. These symptoms all disappear in the space of twenty-four or forty-eight hours, sooner or later, according to the degree in which they prevailed, without any medical assistance. I have known an instance of a young lad who ate these seeds, which produced a distorted eye, that remained ever afterwards.

27. *Medical Repository*, 1802, vol. v, p. 36. Reported by Dr. Samuel Brown.

About 10 a.m. she was observed to catch at the blaze of the fire in a very singular manner, and a few minutes afterwards fell on the floor as if she had been paralysed on one side. In a short time symptoms of violent fever came on, with delirium, and a scarlet efflorescence over the whole body, which had not entirely disappeared when I saw her first at noon. This efflorescence was much more bright and lively than that which characterises scarlatina. Through the day the delirium continued, with short intervals of reason. An unceasing disposition for motion in all the muscles, weeping, screaming, laughter, and rapid incoherent exclamations, formed the leading features. Once or twice the child had made feeble efforts to vomit. On presenting a candle to the child I discovered an unusual dilatation of the pupils and a remarkable squinting of the right eye, which, however, was not constant. The pulse was extremely irregular; sometimes it was hurried and fluttering, sometimes it was tense and strong, and frequently its action was not discernible. The motions of the limbs and body resembled those which mark the highest grade of *chorea Sancti Viti*, but were much more convulsive and violent, and excited in the spectators rather a *painful* than a *ridiculous* emotion. I administered a strong dose of *Emetic tartar*. It was long before I could produce nausea; and, as the first efforts to vomit were abortive, I made use of a feather, which excited one feeble motion. No seeds were discharged, and I found great difficulty, even by the feather, in awakening the powers of the stomach. I then gave eighteen drops of *Ol. tartar., per deliquium*, in a teaspoonful of warm water. It had not reached the stomach two minutes when full vomiting took place, and seven seeds of

Stramonium were thrown up. In the morning I found that, notwithstanding she had slept well, some slight convulsive symptoms, together with wildness of countenance and dilatation of the pupils, remained.

28. *Dublin Quarterly Journal of Medical Science*, 1867, vol. xliv, p. 11.

Sauvages mentions that robbers infesting Montpellier in his time drugged the wine in taverns with the juice of the seeds of *Stramonium*; those who drank it could not speak a word for two or three days, though wide awake.

(Copied from *Sauvages' Nosolog. Method*, tom. i, p. 777.)

29. *Dublin Quarterly Journal of Medical Science*, 1870, vol. xlix, p. 213 (misprinted in my *Index* 249). By Dr. Nicholls.

An elderly gentleman was in the habit of smoking *Stramonium* very freely, mixed with a small quantity of tobacco, for the relief of asthma. After several pipefuls "he would begin to call things by their wrong names, *e. g.* his boots, logs of wood; the bedroom, the stable, &c., and this without knowing it; and it is remarkable that he almost always miscalled the same things. He was a very small drinker, and always remembered the subjects of conversation, but not his language." After a sound sleep he would regain the power of speaking intelligibly.

30. *Dublin Medical Press*, 1842, vol. vii, p. 54. Reported by Dr. Dassier. Translated from *Comptes Rendus des Travaux de la Société de Médecine de Toulouse*, 1841, and *Gazette des Hôpitaux*.

On September 20th, 1840, two children, a boy, aged 4, and a girl, aged 2, whilst amusing themselves with the fruit of *Stramonium*, bruised them between two stones, and being attracted by the seeds, still white, were induced to eat them. Some extraordinary sensation, some hallucination, interrupted their sport, which lasted for about half an hour, for suddenly the two children ran into the house terrified and uttering cries. Their gait was staggering; they leaped rather than walked; their face was red and excited, and the eyes haggard. They both complained of extreme pain at the lower part of the throat, and eagerly drank cold water. Ineffectual efforts to vomit soon

supervened; the most violent contractions of the stomach only expelled some stringy foam from the mouth. The pupils became extremely dilated; the injection of the face augmented; both the children were agitated with convulsive motions, and uttered hoarse, incoherent, and often inarticulate cries. *Olive oil* was given at once. The boy vomited copiously, and experienced an almost immediate improvement; the girl was not so fortunate, and was soon attacked with violent delirium, so that she could with difficulty be restrained; her heart pulsated violently; she was violently agitated, and scratched the attendants who endeavoured to confine her to bed. Leeches behind the ears, sinapisms to the legs, and sugar and water as a drink, were prescribed, and these means quickly subdued the symptoms. The boy, indeed, seemed to be cured, save that he talked with great volubility, and often incoherently.

In the evening the symptoms returned with the greatest intensity in both patients. During the night the boy shrieked violently; his eyes sparkled; the heart pulsated with the most extraordinary violence; he suffered from the most ardent thirst, and passed urine almost incessantly; exposure to the light of a candle caused him to utter the most terrible cries.

The girl was affected somewhat similarly, but less violently. She was more depressed, perspired from the entire surface, and passed scarcely any urine.

Towards morning the symptoms had almost entirely ceased in the boy, but the girl was motionless, and almost cold; her respiration was short, and her pulse small and quick. A cupful of water acidulated with vinegar was administered to the boy every fifteen minutes. As the condition of the girl was more alarming, sinapisms were applied to her legs and thighs, and purgative enemata were administered. She soon passed several frothy stools, in which the seeds of *Stramonium* were discerned. After two days passed in tranquil sleep the symptoms had all disappeared.

31. *Dublin Medical Press*, 1847, vol. xviii, p. 199.

Case copied from the *Lancet*, and already given here.

32. *Dublin Medical Press*, 1848, vol. xx, p. 40. Reported by Dr. B. F. Jones, and copied from the *Western Journal* (American).

Mrs. K—, æt. 31, suffering from amenorrhœa, took twenty drops of the tincture of the seeds, diluted with alcohol, three times a day, increasing the dose by one drop each day. On tenth day reported that she had commenced the day previous to evacuate blood from the bowels in small quantities, and at irregular intervals. To stop medicine for two weeks, and to resume at thirty drops *ter die*, increasing the dose daily as before. In two weeks the menses returned, regular and plentiful.

83. *Dublin Medical Press*, 1856, vol. xxxvi, p. 356.

Dr. Calkin's case, imperfectly copied from the *Boston Medical and Surgical Journal*. (See above.)

84. *Medical and Philosophical Commentaries*, 1778, vol. i, p. 74.

Dr. Rush's case, copied from *The Transactions of the American Philosophical Society*, Philadelphia, vol. i.

The symptoms here given are "Violent fever, delirium, tremors in her limbs, and a general eruption on the skin, accompanied with considerable swelling, itching, and inflammation."

85. *Medical and Philosophical Commentaries*, 1775, vol. iii, p. 18.

This is simply a review of a work called *Dissertatio Medica de Stramonii usu in Morbis Convulsivis*. Auctore Adolph. Fried. Wedenborg, 4to, Upsaliæ." This work, which apparently contains some of the pathogenetic effects of *Stramonium*, should be examined.

86. *Medical and Philosophical Commentaries*, 1777, vol. v, p. 161.

Two cases reported by Thomas Fowler.

CASE 1.—October 12th, 1777. M. S—, near six years of age, and of a healthy constitution. Between 12 and 1 p.m. the day before, she had swallowed three quarters of the seeds of a fresh, ripe, middle-sized thorn-apple. About 2 p.m. she began to look stupid, seemed to forget herself, and gave incoherent answers. At 3 p.m. they gave her some bread and milk, which she attempted to swallow, but could not, upon which they laid her down upon the bed, where she seemed to sleep for about half an hour; but when she awoke her belly, tongue, face, and eyes, were obviously swelled, and the two latter were also very red.

These last symptoms abated about 6 p.m., but from 3.30 to 7 p.m. she seemed to sit like a perfect idiot. At 7 p.m. she seemed to have a motion to stool, and passed a living *lumbricus teres*, fourteen inches long, with a little water, but without any fæces or relief of symptoms, for soon after she began to grow worse, biting a man's hand, sometimes crying out that she saw cats, dogs, and rabbits, at the top, sides, and middle of the room; at other times with great eagerness catching at imaginary objects with her hands, and declaring that she saw many people who were not present. She suffered a continuation of these symptoms with little variation, and totally without rest, from 8 p.m. to 6 a.m. this morning, being all that time restrained in bed by force in a raving and maniacal state. At 8.30 p.m. last night she took about half an ounce of *Ipecac. wine*, and about half an hour afterwards, that not operating, they gave the child four grains of powdered *Ipec.*, but without effect. Towards morning she had a small costive stool. About 8 a.m. she drank near an English pint of milk, and was become somewhat more composed, but still not rational. At 9 a.m. (the time at which I first saw her), I found her a little come to herself, but still frequently incoherent, and looking rather stupid. Her pulse was about 100 strokes in a minute, and her breathing not difficult. I gave her immediately a powder composed of four grains of *Calomel* and eight of *Jalap*, and in half an hour's time it made her throw up once very freely, upon which she immediately fell into a sound sleep, and did not wake till near 1 p.m., when she was perfectly sensible and composed, and made no complaint but of a pain in her head.

13th.—The purgative seemed to operate freely yesterday afternoon. She had three loose stools before 5 p.m., two more in the night, and four or five to-day. Since the operation she has had a tolerable appetite, slept well, and has no complaint but the remains of the headache. Pulse 96.

15th.—The remains of the headache went off yesterday, and she is now entirely free from complaint.

CASE 2.—October 12th, 1777. G. B—, æt. 9, in a good state of health, swallowed a quarter of the seeds of a thorn-apple at the same time as the former patient. About 3 p.m. she found herself affected with considerable headache and a hiccup and swelling of the face, but these symptoms went off by the usual

time of going to bed ; nevertheless, she had but a troublesome night, awaking three or four times with sickness and vomiting. This morning she rose free from symptoms, except a slight headache ; but as she did not appear to be open in her belly, I gave her also a purgative about 9 o'clock, which has since given her several loose stools.

15th.—Two days ago the headache went quite off, and she has been free from complaint ever since.

37. *Transactions of the Medico-Chirurgical Society of Edinburgh*, 1824, p. 285.

Dr. Begbie's report of clinical cases.

In one case there was a degree of that unpleasant nervous sensation referred to the throat which has been mentioned by authors. It was not, however, lasting.

38. *Charleston Medical Journal and Review*, 1854, vol. ix, p. 743. Reported by Dr. C. B. Faust.

On June 28rd I was sent for in haste to see a child of Mr. C—, aged 1 year and 8 months. On my arrival I found the child labouring under the following symptoms:—The whole body of the child was of a scarlet-red ; skin hot and dry ; tongue redder at the apex than the base, and dry ; fauces almost white and dry ; respiration somewhat accelerated ; pulse full, but not preternaturally frequent ; face somewhat swollen ; pupils enormously dilated and insensible to light ; the muscles of the whole body convulsed, and the child screaming almost incessantly.

At about 1.30 p.m. (a few minutes after my arrival) I administered the following:—*Calomel*, gr. v, *Jalap*, gr. v, to be followed in a few hours by a dose of *Ol. ricini*. I then had warm pediluvia ordered, and also cold water poured continuously upon the head ; after using these means for twenty minutes, the child dropped into an apparent sweet slumber and slept about twenty minutes. In about twenty minutes from the time the child went to sleep it awoke, and was like a mad child ; it would hold out its hands as if it wanted a glass of water, then bring them to its mouth, and sip as if drinking water or other fluid ; it would put its fingers into its mouth, and even bite them, and also its mother's fingers whenever she put them about its mouth, also screaming incessantly.

I had the cold water continuously applied to the head; and administered *Ipec.*, gr. v, followed by warm drinks every few minutes.

I continued this for about an hour, but could not produce emesis. I then administered *Sulph. zinc.*, gr. v, followed by draughts of warm water, for fifteen or twenty minutes, and again administered *Sulph. zinc.*, gr. v, in the course of fifteen or twenty minutes longer; vomiting commenced, and there was thrown up about twenty *Stramonium* seeds, intermixed with some indigestible matter of the stomach. I endeavoured to keep up vomiting with warm drinks (which the child took very reluctantly) and irritating the fauces, until it had thrown up fifty-five seeds.

At this time (about 5 p.m.) the vomiting had ceased, although ineffectual efforts were made, and my efforts in reproducing it seemed to be unavailing. I had a mustard sinapism to the epigastrium, and the cold water assiduously applied to the head, which seemed to compose it more than anything else.

At 9 p.m. the child went to sleep again; the pulse at this time natural; respiration natural; skin warm, and not so red as before; pupils still dilated very much, but previous to going to sleep the patient was much more composed.

I then left the following powder:—*Calomel*, gr. v, *Jalap*, gr. v, to be followed at 5 a.m. by a dose of *Ol. ricini*.

At 7 a.m. I found the patient much better than I anticipated, and was informed by the parents that they had to wake it to give it the medicine I had left; and when they had given it to him he soon went to sleep again, and did not wake till the morning, when they administered the *Castor oil*, but as it had had no effect on the bowels when I arrived I ordered another dose, and another if it did not operate by 9 a.m.

As I have remarked, I found my patient much better than I anticipated, although the pupils were very much dilated yet and it could not yet walk; on attempting to walk it would stagger like an intoxicated man, and would fall, although rational. When I returned at 2 p.m. I found my patient running about, and was informed by the mother that the medicine had operated well (it took three tablespoonfuls of *Oil* to move the bowels), and had brought away at least a tablespoonful of *Stramonium* seeds.

Dr. Faust mentions a case reported in Taylor's *Medical Jurisprudence*, and one in Barton's *Medical and Physical Journal*, vol. i.

39. *American Journal of the Medical Sciences, New Series*, 1844, vol. vii, p. 231.

Stramonium excites a scarlatinous redness of the skin and excitement of the genital organs, with salacity. (Translated from *Medicinische Zeitung* and *Encyclographie des Sciences Médicales*, May, 1843.

40. *American Journal of the Medical Sciences, New Series*, 1848, vol. xvi, p. 485.

Dr. Allan's case quoted. (See original above.)

41. *American Journal of the Medical Sciences, Old Series*, 1830, vol. vi, p. 235.

Amelung's observations quoted. (See above.)

42. *American Journal of the Medical Sciences, Old Series*, 1836, vol. xix, p. 271.

Hooker's cases copied. (See original above.)

43. *American Journal of the Medical Sciences, Old Series*, 1836, vol. xxii, pp. 455-8.

Sigmond's cases copied. (See original above.)

44. *American Journal of the Medical Sciences, Old Series*, 1829, vol. v, p. 251. Reported by Dr. R. E. Griffiths.

Charles L—, æt. 3, ate a few seeds with the following result:— He was not seen till about five hours after he had eaten them, at which time his sensorium was much disordered; there were strong convulsions, alternating with great excitement of mind; the pupils of his eyes were so much dilated as almost to obliterate the iris; pulse rapid and contracted; face and upper part of body universally covered with a vivid erysipelatous redness, which gradually disappeared after venesection. This state of things continued for about fourteen hours. The restoration of his senses was sudden and unexpected. Three days afterwards his body became covered with an eruption resembling rubeola, except that it was more prominent; this eruption lasted about twelve hours.

45. *American Journal of the Medical Sciences, New Series*, 1847, vol. xiv, p. 260.

Effects of the *Datura sanguinea*, quoted from Tschudi's *Travels in Peru*. The original work should be referred to for this and other cases.

46. *American Journal of the Medical Sciences, New Series*, 1852, vol. xxiv, p. 269.

Reports by Dr. Giraud, copied from *Transactions of Medical and Physical Society of Bombay*; also given in *British and Foreign Medico-Chirurgical Review*, January, 1851.

The *Datura*, indigenous to India, is probably less fatal than the *Stramonium*. In many cases three stages of symptoms are observed; primary delirium, sopor or even coma, and secondary delirium—a single stage, that of delirium only, occurring in mild cases. The primary delirium may be vociferous or merely garrulous, the patient usually manifesting excessive timidity. In both this and the soporific stage he is constantly engaged in picking at real or imaginary objects, and sometimes in performing such antics as to render laughter on the part even of friends unavoidable. Several of these movements seem to depend on perverted vision, which destroys the power of judging of the distance of objects, and which may be due to the widely dilated pupil, a persistent symptom. The pulse and temperature, usually natural, undergo in some cases extremes of exaltation and depression. In the majority of cases the soporose stage is absent, the delirium subsisting from six to ten hours. On recovery the person usually recollects nothing since the meal at which he was poisoned, so rapid are its effects. (*Query*.—Does the *Stramonium* also grow in India?)

47. *American Journal of the Medical Sciences, New Series*, 1862, vol. xliii, p. 54. Reported by Dr. Charles Carroll Lee.

On September 3rd, 1861, three well-marked cases of poisoning by *Stramonium* seeds were admitted to the Pennsylvania Hospital. One was a man, aged 31, the other two were women, aged respectively 34 and 58 years.

They partook of some whiskey which contained some *Stramonium* seeds. The man drank a cupful, the elder woman about a gill, the younger only one or two mouthfuls. A child of the

latter was also given a little of the mixture, and it was in this case that the effects of the poison were first noticed. Within four or five minutes after taking the draught the child became violently flushed in the face, the eyes glittered and rolled about, and it tottered so as almost to fall from its chair. This alarmed the mother, who, although already giddy and half-blind, managed to run with the bottle to a neighbouring druggist. With much difficulty she again reached her house, where she found the other woman and the man lying speechless on the floor. They were at once taken to the hospital. The man and elder woman were nearly comatose, their faces flushed to an almost violet hue, the conjunctivæ injected, and the pupils were insensible to light, and so strongly dilated as to leave visible merely a rim of iris; the skin of the face and upper extremities was burning hot; the tongue and throat parched and dry; respiration slow and laboured; pulse 100, and very tense and full.

The younger woman had taken a smaller dose of the poison, and had reached only the maniacal stage of its influence; the skin was scarlet and burning hot, and the mydriasis as marked as in the other cases; the tongue parched; intense thirst, but no constriction of the fauces on swallowing; the respiration was hurried; the pulse fluttering, and beating 140 to the minute. The patient was violently delirious, resembling in a marked degree the most excited stage of *delirium tremens*, struggling to get out of bed, and continually rolling from side to side; she was unable to stand by herself, and, unless supported, fell forwards to the ground. When her hands were not restrained it was observed that she pursued imaginary objects in the air, or picked at the bed-clothes, as in the delirium of typhoid fever.

The man exhibited much the same symptoms as the women, catching and striking at imaginary objects around him; but the retina was insensible to light, for a hand passed close in front of the eye failed to make him wink, unless the cornea was touched; he was also more comatose at first, and with a more feeble and rapid pulse—150 per minute. Another alarming symptom was an apparent somnolency, which, according to some authors, marks only the worst cases. Thus, Dr. Stillé says (*Therapeutics and Mat. Med.*, ii, p. 55), "At no period in the progress of the symptoms, *until death grows imminent*, is there the least tendency to sleep; on the contrary, there is an obstinate insomnia; and

yet on the recovery of the patient he retains no distinct recollection of what has occurred."

Next morning he was able to walk and to read large type. Some abnormal dilatation of the pupil and vertigo remained during the day; by evening he was quite well. *Opium* and *Morphia* constituted the principal portion of the treatment.

48. *American Journal of the Medical Sciences, New Series*, 1862, vol. xliv, p. 427.

Experiments on a large male cat with *Tincture of Stramonium*.

Cat full grown, and in fine healthy condition. Gave sixty drops to it at 2.14 p.m. Had not eaten anything since 4 p.m. yesterday.

In two minutes commenced frothing slightly at the mouth, and two minutes after commenced sneezing and coughing.

2.23 p.m.—Vomited slightly a frothy liquid of a greenish-yellow colour. Pupils dilating.

2.27 p.m.—Thrusts tongue out between teeth, and opens and shuts them on it. Tongue red, and apparently swollen; frothing ceased; anxious to crawl off in some secluded place; mewing.

2.36 p.m.—Had a discharge of urine; mewing, and uneasy.

2.42 p.m.—Lying on chest and abdomen; quiet; perfectly conscious of what is passing. Slight vertigo; staggers when walking.

2.50 p.m.—Quiet, lying as if asleep; remained in this state till 3 p.m., when he got up and walked around, mewing.

3.7 p.m.—Lay down with head between forepaws, as if asleep; remained thus till 3.17 p.m. Woke up uneasy; commenced walking about and mewing, continuing in this state till 3.30. Quiet and drowsy.

3.40 p.m.—Gave sixty drops more of tincture; swallowed most of it; passed urine involuntarily two minutes afterwards. Five minutes afterwards walking stupidly around, mewing; considerable vertigo; pupils dilated.

3.50 p.m.—Vertigo increases, can hardly walk; uneasy; dimness of sight; continued in this state till 4.5 p.m., when he became quiet, lay down and slept; breathing easy. At 4.15 p.m. vomited slightly a small quantity of greenish gelatinous fluid, which aroused him.

4.20 p.m.—Became uneasy; walking about, mewing; running

against objects; blind. At 4.30 p.m. became quiet, and fell asleep.

4.35 p.m.—Gave forty drops more; in about two minutes involuntary passing of urine; became very uneasy; mewing constantly; quite blind; cannot walk without falling over from side to side; breathing laboured. This uneasiness lasted till 4.50 p.m.; quiet, apparently sleeping; pulse slow, heavy, and feeble.

5 p.m.—Woke up very uneasy; endeavoured to walk about.

5.5 p.m.—Gave forty drops more. In two minutes became quite conscious; breathing laboured. Five minutes after, aroused; anxious; mewing; unable to stand. In ten minutes afterwards comatose; lying on one side; pupils very much dilated. In fifteen minutes afterwards moving round in a circle; mewing; 60 inspirations per minute.

5.33 p.m.—Gave forty drops more. Two minutes afterwards, lying on side; comatose; breathing laboured; 48 inspirations per minute.

5.40 p.m.—Still comatose; legs in constant motion; the fore- and hind legs on one side move together in same direction; motion alternate, first on one side and then on the other.

5.55 p.m.—Heart beats 50 to the minute; breathing heavy.

5.58 p.m.—Heart beats 40 per minute, feeble; comatose.

6.15 p.m.—Comatose; 40 inspirations per minute. Continued thus till 6.30 p.m.

6.30 p.m.—Gave thirty drops more. After a short struggle he fell down comatose; heart beating slow, heavy, and feeble; breathing heavy and difficult. Continued thus till 7.6 p.m.

7.6 p.m.—Motion in limbs ceased. Eight minutes after, slight motion, with an attempt to move limbs. Respiration ceased at 7.50 p.m. No rigidity of muscular system; whole body limber and flaccid.

Post-mortem, fifty-five minutes after death.—No rigidity of muscles; limbs relaxed and limber; general venous fulness. *Jugulars* distended with dark blood. *Mesenteric veins* gorged with dark blood. *Bladder* full; walls thin and flaccid; no contraction. *Intestines*, distended with gas, presented a knotted appearance. *Stomach*, mucous membrane healthy; contents, about two ounces of a watery frothy mucus. *Duodenum* filled with gas; healthy; contents, small quantities of food and bile.

Jejunum quite empty, slightly congested in spots and lines. *Ileum* more congested than *jejunum*, but congested very slightly; contained small quantity of faecal matter. *Cæcum*, *colon*, and *rectum*, filled with faecal matter; healthy. *Kidneys* very much congested. *Portal veins* filled with dark blood. *Gall-bladder* filled with dark bile. *Lungs* very much congested; filled with dark blood and frothy mucus. *Heart* quite empty; *venæ cavae* filled with dark blood, which contains considerable clot. *Esophagus* very white and pearly. *Pharynx* and *fauces* the same. *Brain* slightly congested; vessels all full; slight effusion in ventricles; considerably congested in membranes.

49. *American Journal of the Medical Sciences, New Series*, 1864, vol. xlvii, p. 552. Reported by Dr. A. Paul Turner.

C. McK—, aged 10 years, and his brother, aged 8, left their home at 10.30 a.m. upon an excursion to some vacant lots at a distance of over a mile from their residence, whence they returned about 3 p.m., and asked for their dinner as if nothing unusual had occurred. While eating, the mother observed a peculiar uneasiness and a tendency to wander from the subject on which they were being questioned, and she asked their comrades if they had not been using intoxicating drinks, but was assured that such was not the case. The two children were then unable to walk. In half an hour the symptoms became more alarming, and I was sent for, and reached the house at 4.30 p.m. I found the children lying on their backs; their eyelids slightly drooping; corneæ very bright; pupils widely dilated and insensible to light; conjunctivæ injected; face deeply suffused, and of a dark crimson colour; an apparent difficulty in breathing; inability to articulate, and in a state of complete insensibility, broken occasionally by a paroxysm, during which they would utter some indistinct sounds and throw the hands about the head as if attempting to ward off some threatening evil; this would soon subside into a semi-comatose state, not the stupidity, however, which results from *Opium*, but rather a state of intense apathy which persisted for a few seconds, when the delirium would again recur, unless sooner produced by the efforts of those about to render assistance, when the state of excitement assumed such a form and violence as to render necessary a certain amount of restraint to prevent escape from the imaginary object which

engaged the attention; occasionally they would grasp at something in the space in front, appear as if he possessed or rejected it, then turn the head as if called by a voice beside them, and attempt to speak to it, the sound resembling a squeak more than the natural tone of voice. Neither of them was able to support himself alone upon his feet, but would take a step or two with a staggering gait, falling to the floor as if intoxicated or in a state of complete exhaustion. During the period of excitement the extremities were in constant motion, co-ordinate only so far as they related to the corresponding limb, yet wanting in that harmony of action which is found in those movements of a higher order, as standing in an erect posture, walking, &c.; there was constant action of the fingers, as if attempting to pick something from the person or bed-clothes; at times they would burst into a paroxysm of excessive laughter, which would persist for some seconds, then suddenly cease; at times they would have a smile so quiet and pleasant that we could not but contrast it with the highly excited state previously witnessed.

To each was given an emetic of *Sulphate of Zinc*, gr. v, and *Pulv. Ipecac.*, gr. x; their jaws being closed, and as they could not be made to comprehend our object, there was no little difficulty in causing them to swallow. Emesis followed, consisting of food and about half a drachm of the seeds. Cold water effusions were employed, and seven drops of *Tinct. opii*.

5.15 p.m.—The *Sulphate of Zinc* was repeated without immediate result, and also the *Opium*. Twenty minutes later, no marked effect having been produced, ten drops of *Laudanum* were given; they are now lying more quiet; dilatation and immobility of the pupils; general appearance unchanged; still insensible, and even when loudly spoken to the eyes would scarcely be turned towards the speaker; still continue to pick at the bed-clothes and grasp at the imaginary objects about them; suddenly move as if spoken to, and apparently attempt to articulate some reply, the limbs being at the same time actively moved, not spasmodically however, but as if attempting to perform some action which failed for want of a proper guiding influence.

6 p.m.—They appear to lie more quiet now, and the iris still remains dilated and uninfluenced when exposed to the action of the light; are not so frequently excited, though at times laugh

immoderately; surface of the body continues very red, though less so than a short time previously. Five drops of *Laudanum* to each.

9 p.m.—Both children are held sitting upon the knees of an attendant, whose attention is fully directed towards preventing them from falling during the periods of excitement, which are less violent and appear to be more in the direction of intelligence. The skin remains as from the beginning, somewhat relaxed, though not moist, and very slightly elevated in temperature; pulse 95, compressible, and full in volume, and has varied but little from this since the commencement of the symptoms, even during the paroxysmal state, and this is to be attributed perhaps to the muscular movements rather than to direct action on the heart. Pupils now are less dilated, though very slightly influenced by light; children are able to articulate, but cannot be made to comprehend questions put to them, and occasionally laugh or attempt to sing. Five drops more of *Laudanum* are given now, and repeated in thirty minutes.

Next day, 9 a.m.—The youngest child was now quietly sleeping, but could be awaked without difficulty. During the night ten drops more of the *Laudanum* had been given to each. The eldest was quietly lying on the bed; pupils more contracted than when last seen, and became more so when exposed to a strong light; skin moist and cool, has lost that efflorescent appearance which was before so strongly apparent; pulse 86; respiration normal; responds *Yes* and *No* to necessary inquiries, but does not complain or attempt to converse; is wholly uninterested in all that passes about him, and as he lies on his side smiles as if amused at some ludicrous idea passing in his mind; at intervals has slept during the night, though frequently disturbed by illusions.

6 p.m.—Much better; pupils nearly normal in diameter, but not quite so susceptible to light as desired; complains of slight dryness of the fauces; some vertigo, with occasional delirium through the day; and the eldest, when asked in reference to his thoughts, replied that he felt as if dreaming, though not asleep.

Next day all were well.

There were five others younger who had eaten the seeds, in whom there was dilatation and immobility of the pupils.

50. *American Journal of the Medical Sciences, New Series*, 1866, vol. lii, p. 278. Reported by Dr. H. G. Evans.

Seven children, aged from 6 to 9 years, had eaten the seeds about 10 a.m. At dinner (noon) two of the boys were noticed behaving in an unusual manner, refusing to eat, and quarrelling with those near them. Very soon a third boy, and by 1 p.m. seven, gave marked symptoms of being victims. I saw them at 2 p.m., four hours after they had taken the seeds. In all seven the pupils were dilated to their fullest capacity. In three this, with slight perversion of vision, were the only noticeable effects; but in the four remaining cases the poison had produced dilated pupils, perverted vision, confusion of intellect, deafness, intoxication, full pulse, slow respiration, entire loss of power of directing the motion of the limbs; no eruption, nausea, or relaxation of bowels; and in a few hours stupor, which was soon followed by obstinate insomnia, and in one case delirium tremens.

By the third day every vestige of the poison had disappeared, the pupils being the last to yield. It was with the greatest difficulty that emesis was produced in the least affected of the seven cases, notwithstanding the powerful means employed; the four worst cases were scarcely nauseated by them.

51. *New England Journal of Medicine and Surgery*, 1820, vol. ix, p. 224. Reported by Dr. T. Pomeroy.

The patient, who suffered from pain in the leg, took pills containing three quarters of a grain of an extract made from the stalks and leaves of *Stramonium*, and half a grain of *Tart. Antimon.*, every hour. Before the expiration of an hour after taking the first he was very sensibly affected, but the second was given him. Immediately the following effects commenced:—Almost total blindness ensued; great prostration of strength; vertigo; aridity of the mouth and fauces, together with vomiting and purging. These appearances continued from six to twelve hours. The blindness was so complete that he called for a candle in the middle of the day.

Orfila's case quoted. See above, *Sigmond's* observations; the two translations differ in one important particular, therefore the original should be referred to in *Bulletins of the Faculty of Medicine of Paris*, 1819, No. 9.

52. *New England Journal of Medicine and Surgery*, 1823, vol. xii, p. 253.

No name is attached to this case.

T. B—, æt. 27, swallowed a large wineglassful of *Tincture of Stramonium* at a draught. He was immediately attacked with vertigo, dilatation of the pupils of the eyes, with double and confused vision, nausea, but not vomiting, and drowsiness, followed by coma. I did not see him till two hours after he drank the tincture. In addition to the above symptoms he was violently convulsed, every muscle in his body appearing to be in violent commotion. He was continually beating his breast with his hands, like a catholic doing penance. His jaws were set as in tetanus; he moaned continually; his breathing was stertorous, and occasionally there was rattling in his throat. His extremities were cold; his pulse nearly obliterated; he had cold clammy sweats, and his countenance was hippocratic. I resorted to friction over the whole surface of his body, applied bladders of warm water to his hands and feet, and endeavoured to restore the circulation. I prepared a powerful solution of *Tartarized Antimony*, and with great difficulty prised open his jaws, and endeavoured to get a little into his stomach by half a teaspoonful at a time. After unwearied attempts he at length swallowed a little of it, but it almost caused strangulation. This was continued for two hours. Deglutition now became almost or quite impossible. In about half an hour after he last swallowed he began to vomit it. He threw up considerable matter, having the smell of *Stramonium*; he was then able to swallow without much difficulty. He remained senseless till morning, when he awoke totally unconscious that anything had happened to him. He still saw indistinctly, and the pupils of the eye remained dilated, but they gradually returned to their natural state. He recovered in the course of a few days.

53. *New England Journal of Medicine and Surgery*, 1825, vol. xiv, p. 375. Quoted from *Medico-Chirurgical Review*.

A suppository containing, with other ingredients, one third of a drachm of *Extract of Stramonium*, was introduced into the rectum of a patient. He became affected with symptoms closely resembling delirium tremens, and nearly died.

54. *American Medical Times*, 1860, vol. i, p. 22. Reported by John G. Johnson.

A boy, æt. 7, ate some green seeds (the quantity being uncertain) in the afternoon. About 5 p.m. his mother noticed some hesitation in his speech, and that his face was flushed. As it was some two hours to dinner she gave him an apple to eat; as he divided it she noticed a peculiar twitching of his fingers, and as he handed his mother a portion there was a movement of his hands like a patient with chorea. On biting the apple, which was quite juicy, he said it was dry like flour, and that it hurt his throat; he threw it aside, and lay down on the lounge. His mother inquired if he were sick, and he replied in tones so loud and violent that it startled her. As the twitching increased she lifted him up to get him upstairs, when she found he staggered so as hardly to be able to walk, and in passing through the door fell against it. An emetic was given at once. I first saw the child at 7 p.m., about two hours and a half after he had eaten the seeds. He was then tossing violently in his father's arms, with a spasmodic twitching of the hands, like a child agitated and suffering from chorea. The pupil of the eye was enormously dilated, more so than I have ever seen from the full action of *Belladonna*; the face, and especially the mouth, was much swollen; he was perfectly blind, the full flash of the gas failing to produce the slightest contraction of the pupil. There were such violent movements of the hands and subsultus tendinum that it was impossible to count the pulse. The heart's action was feeble, but not increased in frequency. There was no perspiration in any part of the body. The feet and whole lower extremities were cold and palsied, and hung powerless over the father's lap, in marked contrast to the rest of the body, which was so much agitated. There had been some emesis from the emetics given, but not free; a tablespoonful of mustard and another of salt were immediately mixed with warm water, and pressing the tongue strongly down I attempted to make the child swallow it; considerable difficulty, however, was found in deglutition, and such severe symptoms of strangulation supervened that the parents would not allow me to repeat my endeavours to make the child swallow. Free vomiting soon followed, consisting of food and seeds. As there had been no action of bowels, a strong soap-suds enema was given. The child now

seemed to be going into convulsions, and his head was immediately placed under the cold shower-bath, while his body reclined in warm water, as the coldness of the limbs had increased. Strong coffee was also forced down, though with great difficulty, as the child seemed to choke at every attempt to swallow.

9 p.m.—The child has had no convulsions; is picking at imaginary bodies in the air, and has a violent maniacal action; cannot articulate, but the words he attempts are loud and harsh; the pupil is extremely dilated, and does not respond in the slightest degree to light; the coldness of the extremities and loss of power marked. Coffee continued.

10 p.m.—Hears sounds more distinctly. His brother played on the guitar, and sang a favourite tune; boy noticed the music, but turned in an uncertain manner towards him; attempts to sing, but cannot; is very violent in the attempt to articulate; involuntary movements of his hands continue; pupils still dilated; extremities cold and palsied. Continue coffee.

5 a.m.—Pupil still enormously dilated; perfectly blind; hearing good; cannot tell whether the gas is lighted or not; the pupil does not contract in the slightest from the full glare of the light on it; the limbs are still paralysed; some improvement in his speech, can now articulate more distinctly, but not so that a stranger can understand him; the same fierceness in his speech continues. The bowels now moved for the first time since eating the seeds; choreic movements of hands continued. As he vomited every time the coffee was given it was suspended.

7 a.m.—Swelling of face subsiding; twitching of the fingers continues; the pupil is dilated as before, and he cannot tell whether the light is burning or not, though his face is turned to the gaslight; there is now a more distinct utterance, but the voice continues loud; he has no power over his limbs.

Thursday morning (next day).—Pupil does not respond to the light, though it is now forty hours since taking the *Stramonium*. Twitching of fingers is much less, and he has considerable fever; he still picks at imaginary objects.

Friday morning.—Pupil responds better to the light, and he sees more distinctly; the brilliancy of the eye is less marked; power of legs is restored; he wishes his playthings, and has more desire for food.

Saturday morning.—The pupil responds well to the light,

though not perfectly. There is some redness of the fauces still remaining, and the child is unusually nervous.

55. *American Medical Times*, 1860, vol. ii, p. 128. By Dr. G. T. Elliot.

A lady made an infusion of four ounces of *Stramonium* leaves to 1 pint of boiling water, and injected a quarter of it into the rectum. She almost instantly came staggering wildly into her bedroom, and fell upon the bed unconscious. I found her with her countenance flushed; eyes staring stupidly; pupils widely dilated; muttering incoherently, and unable to reply to questions; restless, uneasy, tossing, throwing herself suddenly forward; striving to get out of bed; grasping with her hands vaguely, as though under the influence of spectral illusions; picking at the bedclothes; pulse rapid and feeble; expectorating occasionally thick mucus, without regard to where it fell. When allowed to get up she staggered vaguely in a purposeless manner, and appeared quite blind. An enema of warm water was given. After some time she began to show signs of improvement, and a tendency to sleep, from which, however, she would every little while wake suddenly, and present all the symptoms described. She remained in a similar state all next day, though able to speak; but on the following morning she recognised her friends. The pupils remained dilated for a week.

Dr. Elliot refers to another case published by him in the New York Journal of Medicine. This case is given below as copied by the *Dublin Medical Press*, but the *original* should be examined.

56. *London Medical Review*, 1863, vol. iii, pp. 50-5.

(Copied from *Schmidt's Jahrbuch*, 1862, No. 4.)

CASE 1. — An Austrian sergeant, æt. 61, took about two ounces of the tincture of the seeds, made with brandy, at bedtime for cramps in the legs. He had only two hours' restless sleep, and on waking experienced convulsive twitchings of the hands and feet; nevertheless, on the following morning he took two ounces more, and gave the same quantity to each of four soldiers who were suffering from granular ophthalmia. All five men had the following symptoms:—Brilliancy of the eye, excessive dilatation of pupil, which was insensible to light; turgescence and redness of the face; giddiness and unsteadiness

of gait. The sergeant, who had taken two doses, had violent and continuous tremblings of the limbs, and was unable to understand or answer any questions.

CASE 2.—Copied from *Journal de Chimie Médicale*, February, 1862. This case is by Dr. Liegey, and is given more fully below.

CASE 3.—Dr. Lee's cases referred to. See original above.

57. *Medical Times*, 1847, vol. xvi, p. 650. Reported by Dr Stobo. The case occurred at Tortola, West Indies.

A boy, aged about 5, ate more than a drachm of ripe seeds, slightly roasted. When seen, about an hour afterwards, he appeared much excited and rather delirious; under the impression of some immediate danger, clinging to the person who held him on her lap. Pulse about 120; face flushed; eyes of a peculiar dazzling lustre, pupils dilated; convulsive motion of the limbs and neck; thick frothy saliva about the mouth. Emetics and *Castor oil* were given with effect. The boy seemed relieved for the moment; the eyes were in the same state; the tossing about of the limbs was rather increased; the pulse had risen in volume and frequency, with much flushing of the face, &c.; the skin, naturally pale, became of a bright copper colour; the temperature of the body was much increased. Repeated *Castor oil* and bled him.

10 p.m.—Pulse about 100; skin and head cool; appearance of terror worn off, but in its place maniacal *vigilium*, unceasing motion, and a disposition to sing. *Opium epithems* to head.

Next day.—Has not slept during the night; pulse 98; skin cool; eyes more natural; has been constantly moving over his mattress singing and talking; bowels have been moved. The restlessness wore away during the day. *Opium*, *Spt. Æth.* *Nitr.*, and *Camphor*, to be given at bedtime.

Third day.—Slept well; asked for food on waking; a slight idiotic expression; a little reduced.

58. *Medical Times (Medical Times and Gazette)*, 1852, vol. xxv of Old Series; vol. iv of New Series, p. 197. Reported by Drs. Gould and Thurston.

A lady took some infusion of the seeds. She had headache, dryness of the throat and fauces, faintness, difficulty in walking,

languor, and impairment of vision, pupils greatly dilated. Three others had been similarly affected by it. One of them suffered with contraction of the muscles and swelling of the hands and feet.

59. *London Medical Repository*, 1820, vol. xiii, p. 259.
Orfila's case quoted. (See above.)

60. *London Medical Repository*, New Series, vol. i, p. 70.
Extract from *Med. Chir. Review*. (See above.)

61. *London Medical Repository*, 1821, vol. xv, Old Series, p. 337.
Case by Sarlandière. Copied from the "Bulletin of the Medical Society of Emulation," in the *Revue Médicale* for February,

A man and his wife took an enema containing *Stramonium* and *Papaver nigrum*.

Dr. Sarlandière found the man in a state of permanent convulsion with commencing symptoms of opisthotonos, the eyes being fixed and open, and the pupil so much dilated that the circle of the iris was scarcely perceptible; the limbs were at first convulsively moved in an automatic manner, which movement afterwards gave place to a kind of tetanic spasm. The woman was likewise affected; she was, however, without the convulsive agitations of her husband; but she had fixed eyes with excessively dilated pupils. Purgatives and acid injections and drinks were given.

At the end of about an hour from the commencement of this treatment the spasmodic rigidity gave way, and he almost immediately placed himself in his bed, in the same attitude as when sitting on his board (he is a tailor), and now the symptoms of somnambulism became completely marked. He was imaginarily engaged in his usual occupation, appeared to be extending or folding up cloth, took hold of something which he supposed to be a needle, appeared to be threading his needle, and made a knot on the imaginary thread. Sometimes, supposing that he had let the thread slip, he renewed the operation of threading; and he appeared to make several unsuccessful attempts at pushing it through the needle's eye, till at length he seemed to have succeeded. All endeavours to make him hear and see were

fruitless. He took not the smallest notice of loud sounds addressed immediately to his ears, nor did he regard any object placed before his eyes, intent only on his imaginary occupation. At times he seemed to conceive that some one had entered the room, and his countenance then assumed a smiling aspect, and he moved his lips as if speaking (no sounds, however, were emitted); the motion of his lips then ceased for some time, and he appeared to be listening to the reply of the visitor. He occasionally made the motion as if of spitting, though in effect he did not spit. Now he seemed occupied in measuring for clothes, now in arranging and folding his cloth, cutting it with his scissors, and, in fact, doing everything in the way of his calling. He was thus occupied for fifteen hours, without eating or drinking anything, excepting a few spoonfuls of citric lemonade, and this it was difficult to make him take. By degrees he recovered the power of speech; he then commenced a conversation, imagining that he received answers to his remarks. It was not till towards the evening that he actually understood what was said to him, and replied rationally. His sight was not restored till after the return of his speech; he shortly, however, was able to distinguish the persons who were about him. His head, notwithstanding, still continued to run upon his business; he persevered in his supposed employ, and actually conceived that he was making use of his trade utensils. At Dr. Sarlandière's sixth visit he was under the same delusion; he was conversing familiarly with those about him, but still on the subject of his business; and all endeavours to convince him that he was not on his board, but in his bed, proved unavailing. Dr. Sarlandière now held a watch to his ear (at midnight), letting him hear it strike the time, and telling him that business had better be abandoned for the present, or it would prove too fatiguing, injure his health, and prevent him working next day. The patient now descended from his imaginary board, undressed, and laid himself down to rest. During the rest of the night he was calm, with the exception of some involuntary startings; and on the following day his senses returned. A slight fever followed.

In the case of the woman she found herself almost immediately affected with giddiness; her arms seemed to have the weight of lead; she saw thousands of flies about her, to which succeeded a number of serpents, lighted kilns, and apartments,

hung with black; but in the midst of these objects she occasionally perceived those by whom she was really surrounded; she saw her own apartment, her husband, her furniture, &c. She continued the whole of the day sitting in a chair, and she thought that needles, scissors, and pieces of cloth lay about her. Sometimes she tried to lay hold of these things in order to occupy herself at her accustomed work, but they seemed to elude her grasp. Sometimes she felt that she had succeeded in getting hold of them, and she set about using them as usual. The above she afterwards related from recollection; and Dr. Sarlandière had noticed that her actions during the paroxysm corresponded with her accounts. In her, as well as in her husband, the pupil was excessively dilated; the eyes themselves were fixed and fully open; but throughout she was more alive to her actual condition, and when questioned as to the cause of her disorder, she attributed it to the enema she had taken in the morning. Sometimes she suddenly started, as if urged by a momentous impulse; sometimes she rose up as if to run rapidly from a pursuing enemy. But during the whole time she preserved the use of her speech, her ears, and even her eyes, when her attention was forcibly called to surrounding things.

62. *London Medical Repository*, 1827, New Series, vol. iv, p. 422.

Dr. Meig's case, copied from *North American Medical and Surgical Journal*, for January.

CASE 1.—A young girl had swallowed a number of the seeds. She was insensible, completely tetanic, and had a very dilated pupil.

CASE 2.—The effect produced on some of the first settlers in Virginia was a high degree of intoxication.

CASE 3.—A girl, aged $2\frac{1}{2}$ years, ate some seeds in the forenoon.

The first symptom was a high degree of exhilaration, in which she excited much merriment by her extravagant gestures and speeches. This soon became alarming; and when I was called to see her she was laughing, crying, and singing by turns, proceeding from one to the other state with the greatest rapidity. She occasionally started with great force and alarm, crying out that she was going to fall; when she would cling to her mother with as much desperation as if she was about to be thrown from a

precipice. She would next become calm, then whistle, and afterwards point with her finger at *musca volitantes*, which she followed with her eye and hand, at last clutching at them, with an appearance of disappointment at the want of success. The colour of her face was of a scarlet red. I have certainly never seen so intense a red in scarlatina. Her skin was hot; pulse much accelerated; tongue and fauces dry and red; the former was so dry that it glistened. The face, neck, and breast were covered with hundreds of small brilliant petechiæ, many of which had a stellated form.

After an emetic and purgative the central symptoms gradually diminished till midnight, when she fell asleep.

Second day.—Tolerably well. The petechiæ still quite evident, not being much changed. A troublesome itching of the whole skin, which came on yesterday, was gone.

Fourth day.—Child is well, but petechiæ not gone.

Twelfth day.—Petechiæ no longer visible.

63. *Medical Facts and Observations*, 1794, vol. v, p. 78. By Dr. James Johnson.

About 5 p.m., November 12th, Miss S—, æt. 20, swallowed some seeds. In three hours she began to be sick; took an emetic of mustard, which acted.

11 p.m.—Had vomited several times; took a purgative, which produced several stools. She passed a restless night, complained of great pain of her stomach and left arm; fancied she saw objects which did not exist, and had repeatedly a sensation of a flashing light, which made her think that she saw it lighten.

November 15th.—Sickness and pains of stomach had continued till now.

17th.—No complaints but weakness.

Dr. Rush's case is now quoted from *Transactions of American Philosophical Society*, vol. i, p. 318.

A girl, between 3 and 4 years old, ate some seeds. She had fever, delirium, tremor of limbs, and a general eruption on her skin; the tremor still continued at times in her hands for a week; she was blind and stupid; pupils much dilated; she caught at the bedclothes and everything around her, like a person in the last stage of a fever.

Lobstein's cases quoted from *An Appendix to Dissertatio de*

Vegetabilibus Venenatis Alsatie. By F. A. Guerin, 4to, Strasburg, 1766.

About 5 p.m. a girl æt. 9 and a boy æt. 6 ate some seeds.

At 9 p.m. the girl complained of lassitude and went to bed. Her mother soon afterwards, finding her feverish, and talking in her sleep, gave her something warm to drink. She continued in this state till 1 a.m., when the boy also had become extremely restless. At 7 a.m. they were both much convulsed; faces and cheeks swelled; lips of a dark red; eyelids swelled and closed; on separating eyelids, pupils were found to be much dilated, the eyes themselves were convulsed. Their bellies were tumid but not hard. When they were loudly spoken to, or when anybody touched them, their convulsions became more frequent and violent. In each the tongue was swelled and protruded out of the mouth; and their fauces were so constricted that respiration was performed with difficulty. By degrees the spasms became less violent, and their skin, from being intensely hot, became moist; their pulse was still quick, but softer. They now rejected every kind of liquid, and seemed to labour under hydrophobia; for on offering a cup of drink to them, the moment it touched their lips the spasms returned with great violence. Emetics and clysters were given. Their bellies now became less tumid; breathing was easier; and the swelling of their faces subsided. Lemon juice and vinegar and water were given them.

11 a.m.—The girl more quiet, but still at times convulsed. She drank freely of vinegar and water; her pulse was softer; she perspired considerably; the tumefaction of her belly had subsided; she was free from delirium, but the pupils were still dilated. The boy remained unrelieved.

8 p.m.—The girl was sufficiently restored to give her friends an account of the plant, the seeds of which they had eaten. She had had some refreshing sleep, but her pupils were still so dilated as not to contract on the approach of a candle. The boy likewise now began to mend, and at 11 p.m. opened his eyes and spoke to those about him.

The next day they were both of them pretty well recovered.

Fowler's case quoted. (See original above.)

References also given to Murray's *Apparatus Medicaminum*, 8vo. Gotting., 1776, tom. i, p. 456; and to Woodville's *Medical*

Botany, vol. ii, p. 338; also to Anderson in *London Medical Journal*, vol. x, p. 285.

64. *London Medical Journal*, 1789, vol. x, p. 285.

Apparently an editorial paper.

The dried leaf produces intoxication.

In the minutes of the Hospital Board (Madras), Dr. Anderson says, "The seeds of one apple are sufficient to induce immediate apoplexy, and death in five or six hours."

65. *Medical Circular*, 1860, vol. xvii, p. 214.

Anderson's case copied from *Edinburgh Medical Journal*. (See below.)

66. *Essays and Observations*, Edinburgh, 1756, vol. ii, p. 247.

Dr. Abraham Swaine's case.

A man, æt. 69, drank a decoction in milk of one and a half apples of *Stramonium* about 8 a.m., fasting. Presently afterwards he became vertiginous or giddy, and therefore rose from his chair to take the air, with an intention to pluck more fruit. In walking 200 or 300 yards from his house, he staggered as if drunk, feared he should fall upon his head, and that he was about to lose his senses, but had no sickness or the least inclination to vomit. As soon as he got home he went to bed, and complaining of an excessive dryness of his tongue and throat, a little water mixed with wine was given him; he also felt an odd sensation of dryness in, and violent girding across, the thorax. In less than half an hour he began to falter in his speech, became insensible, restless, and muttered frequently, in which condition I found him. His extremities, and also the trunk of his body, were cold; his pulse small and quick. He often raised himself on his knees, continually stretched out his arms, and employed his hands as if searching for something he wanted; his eyes were dull and heavy; after some time he became dumb and more quiet; had almost no pulse; and upon his being taken out of bed, that it might be put into better order, his limbs were visibly paralytic. Although he changed postures a little, yet he remained stupid for six or seven hours, then he raged furiously, requiring two persons to hold him in bed; notwithstanding which he raised himself up, tossed greatly, and seemed to catch

at the bystanders with his hands, uttering incoherent sentences. At last he became sensible and more quiet; restless and delirious by turns. At about 10 p.m. of same day perfectly recovered.

After taking a purgative he slept well all night, and had several stools in the morning. For the space of fourteen hours he neither slept, vomited, nor discharged anything by stool or urine, though he frequently passed urine at other times, being grievously afflicted with the gravel.

67. *St. George's Hospital Reports*, 1868, vol. iii, p. 159. Reported by Dr. C. Paget Blake.

The patient who was about 70, a fine, tall, stout, well-built man, suffering from asthma, took one and a half drachms of *Tincture of Stramonium* about 1 a.m.

He had gone to bed about 11.20 p.m., and had been heard pacing his room, and making an unusual noise up to a late hour. The last time he was heard moving was about 4 or 4.30 a.m. About 7 a.m. they rapped at his door as usual, but obtained no response. At 8 a.m. they tried to open the door, but found some resistance. They pushed it open by force, and then saw the patient lying on the floor in his night shirt, with his feet at the door, as if he had been pushing against it, and his head right under the bed. They spoke to him, and tried to make him reply, but found him cold and apparently dying. I was at the house in seven or eight minutes, and on going to the bedroom found a strange sense of disorder as regards the furniture, and the patient in an alarming state of collapse, just in the position in which he had been discovered. The features were sunken; the skin icy-cold, and covered with clammy sweat; the hands and feet livid (the former much bruised); no pulse to be felt at the wrists; the heart's action excessively feeble and intermitting; the pupils so contracted as scarcely to be discernible, smaller than I have ever seen in a cat's eye. I endeavoured to pour a little brandy down the throat, but there was not the slightest attempt at or power of swallowing.

He remained perfectly unconscious and could not be roused; paid no heed to the loudest shouting; did not feel the smartest pinching; while the arms and legs, when lifted, fell flaccid and lifeless. There was terrible dyspnoea; indeed, the function of respiration was rather a succession of deep gasps and sobs, and

the little vitality still left in him seemed becoming rapidly expended by the tremendous effort and increasing struggle to breathe.

The first evidence of returning power was that of a slight gurgling in the throat, induced by my pouring a teaspoonful of brandy into his mouth, and then tipping the head gently back to help it down the throat. This gurgling continued about two minutes, when I thought he made a slight attempt to swallow, but the presence of the brandy instantly produced a violent spasm, and it was again seen running from the mouth. After about two hours there were signs of returning animation. The pulse was perceptible at the wrist; the heart's action became firmer; the breathing less gasping, and the surface warmer. I had an immensity of trouble still to get him to drink the smallest sip of brandy and water. Every attempt at deglutition brought on a spasm, evidently from violent constriction of the pharynx. As the powers of life gradually returned there was a constant sort of gulping, as if striving to swallow even when no fluid was being given, and it appeared to be the cause of much distress to him, though he was still unconscious. *Sulphate of Zinc* was given, which caused the ejection of the whole contents of the stomach. He then gradually rallied, opened his eyes, and stared wildly about him, though evidently unable to see anything; the pupils still intensely contracted, and on waving the hand before them he never blinked or took the least notice. I now gave him *Ammonia* and *Aether*. There was still the same terrible spasm of the throat at each attempt to swallow, like that in hydrophobia, but still the fluids did pass eventually, after much struggling, but there was no other kind of convulsive movements in any other part of the body. The *Ammonia* and *Aether* draught was vomited almost immediately, and at the same time, from this effort, a large quantity of peculiarly offensive urine passed involuntarily. The vital powers now gradually returned. About 12.30 the pupils began to expand, and vision gradually returned. He looked inquiringly round the room, and with some degree of terror, apparently wondering at the strange scenes dawning upon him. He continued gulping, as if striving vainly to get rid of some substance in the throat; and he made ineffectual attempts to speak, but not a syllable could be articulated; the mouth was too dry and parched; the secretion of saliva being evidently entirely

suspended. Before 1 p.m. the *Castor oil* he had taken acted, bringing away a highly offensive evacuation. Shortly afterwards smart reaction set in. The face became flushed; the head congested. He muttered unintelligible sounds, looked wildly around, and could not be made to do what he was told, though he apparently understood all that was going on. He kept wanting, seemingly, to clutch at some person or persons whom he imagined were before him, but he could not use his arms; though he tried to do so. There were no convulsions, but the arms and legs were quite rigid, and when they were moved remained in any position in which they were placed.

The room presented a disordered appearance; all the furniture was displaced or broken, and the whole apartment appeared as if a desperate struggle had taken place.

He kept repeating all that day, but wandered in his mind and could not articulate. He took what was given him; became more tractable and gentle; and all the different symptoms gradually disappeared. He could not, however, speak at all intelligibly till the end of the next day, and then continually misplaced words; calling his head his foot, his arm his leg, and misnaming the things he required, though ludicrously unconscious of his perpetual misnomers. All this day, too, he simply answered when spoken to, but never volunteered any remarks, and was constantly muttering a strange jargon of sentences. It was several days ere he could converse without calling something by a wrong name.

At my evening visit on the third day he could speak with tolerable distinctness, but thickly, like a person with quinsy, and the throat and tongue were painfully dry, the glands of the mouth not yet fulfilling their natural functions.

By the fourth day he was convalescent, but complained of much tingling of lips and itching of skin.

He now said that he took the dose about 1 a.m., felt dizzy and stupid shortly after taking it, and laid down in his bed about 1.30, thinking he was likely to drop off to sleep directly. He could not remember anything more till three days afterwards, when he saw me by his bedside (at my evening visit), and that he then began to wonder what was going on, and what had happened in the long interval which he felt sure had elapsed since he went to bed. Whatever had been going on was unknown

to him, even though he had been answering questions, and doing whatever he was desired to do. He said he should always look upon those three days as "a void in his life; that he had had a three days' trance."

68. *London Medico-Chirurgical Transactions*, 1816, vol. vii, p. 551. Reported by Dr. Marcet.

References made to Samuel Cooper's inaugural dissertation on *Stram.*, 1797, published in Caldwell's *Selected Medical Theses*, Philadelphia, 1865; and Bartram, in *Transactions of the College of Physicians of Philadelphia*, I, 198, &c.

Boerhaave says, "some boys who had eaten the seeds were seized with giddiness, horrible imaginations, terrors, and delirium, and those who did not soon vomit, died." (No reference given.)

Extract from *Woodville's Medical Botany*, II, 339. Several children who had swallowed the seeds were seized with blindness and a kind of madness, biting, scratching, shrieking, laughing, and crying in a frightful manner.

References to *Edin. Med. Journal*, vol. v, p. 161. See above.

The effects which were most commonly observed were vertigo, a sense of dryness and suffocation in the throat, and a peculiar affection of the eyes, sometimes attended with sleepiness, and even in some instances with a degree of delirium. Some writers assert that it is apt to paralyse the iris and dilate the pupil. Others mention the aperient tendency of the medicine. (This seems merely copied from old authors.—E. W. B.)

The most common effect of *Stramonium* in doses of $\frac{1}{4}$ th to 1 grain is to occasion a sort of nervous shock, which is frequently attended with a momentary affection of the head and eyes, with a degree of nausea, and with phenomena resembling those that are produced by intoxication; to excite in many instances nervous sensations which are referred to the œsophagus or bronchiæ or fauces, and which sometimes amount to a sense of suffocation; to have rather a relaxing than an astringent effect upon the bowels; to have no marked influence on the frequency of the pulse, though in a few instances it has appeared to render it somewhat slower; to produce but a transitory and inconsiderable dilatation of the pupil, and to have but little immediate tendency to induce sleep.

Dr. Marcet next gives some cases of patients who experienced the following symptoms from the *Stramonium*.

CASE 1.—A woman. A peculiar sensation of heat in the throat, with a kind of spasmodic affection of the breathing, which always went off after a few minutes. (After every dose of $\frac{1}{2}$ grain of extract.)

CASE 3.—A woman. Dose $\frac{1}{2}$ grain increased to $\frac{3}{4}$ th grain three times a day. Within a few minutes after the dose a peculiar sensation in throat, which she compared to a current of wind rushing up and down the inside of her throat, and producing a slight sense of suffocation. This occurred whenever she took the dose.

CASE 4.—A woman. Dose, $\frac{1}{2}$ grain of the extract from the seeds three times a day. Giddiness and dimness of sight, which lasted a few minutes, were uniformly produced in about fifteen minutes after the dose. On one occasion, about twenty minutes after taking it, her eyes became dim like those of a person either extremely sleepy or in a state of intoxication, the pupils appeared somewhat dilated, and she seemed extremely languid and unwilling to speak. The pulse, which had been rather quick, became a little slower. In thirty minutes these effects had disappeared.

CASE 5.—A woman. Dose, $\frac{1}{2}$ to $1\frac{1}{2}$ grain of extract from entire plant. Slight momentary giddiness.

CASE 7.—A man. Dose, 1 grain three times a day. Giddiness and some rambling during sleep.

CASE 9.—A man. Dose, $\frac{1}{2}$ grain of extract from the seeds three times a day. Slight dizziness.

CASE 10.—A man. Dose, 1 grain of extract from seeds. Dizziness and nausea.

CASE 13.—A woman. Dose, $\frac{1}{2}$ th grain. Great affection of head and stomach, and such a general nervous agitation as could not be endured.

69. *Edinburgh Medical Journal*, 1860, vol. v, p. 1100. By Dr. Thomas Anderson.

(Query. Is this a case of poisoning by *Stramonium* or some other plant? It occurred in India.)

A sepoy was found lying by the roadside in a state of high delirium. I saw him immediately after he was brought to the hospital, and found him in the following state:—He was reclining

on his back in bed in a wakeful muttering delirium, unbroken even by an interval of transitory consciousness. His face was much flushed; his eyes were reddened and wandering, and the pupils were brilliant, widely dilated, and quite insensible to light. The pulse was much accelerated and small. He continually twitched his extremities, but especially his hands, and every now and then pinched and tugged at the bedding. Though utterly unconscious to real external objects the brain was evidently active, with continual visions before the eyes, as his mutterings and frequent clutchings referred to imaginary objects. He was not in the least degree violent, and required no restraint, but merely an attendant to keep him covered during his restless tossings about. He swallowed any liquid put into his mouth, but exactly as patients in delirium tremens do, in one convulsive mouthful. *Morphia* was given every hour. After eighth dose, about 11 p.m., his attention could be fixed for a moment, and the muttering could be arrested by loudly talking to and shaking him; the hands were less tremulous.

6 a.m.—Delirium almost gone, the tremulousness much relieved, pupils almost natural; was able to talk.

70. *Australian Medical Journal*, 1859, vol. iv, p. 186. By Dr. A. F. A. Greeves.

Three hours ago, Mrs. —, æt. 40, swallowed about a teaspoonful of seeds. In half an hour she began to feel ill. She has now the pupils so extremely dilated that no iris can be seen: she has vertigo, vomiting, intolerable burning of the throat, excessive sense of suffocation, feeble and faltering pulse, irregular, and varying from 120 to 130; cold extremities, languor, loss of sensation (touch, taste, &c.), and palpable diminution of sensorial power.

After treatment, at 7 p.m., was able to sit up, but was weak and felt giddy, with pulse still irregular, and pupils a little dilated.

71. *Australian Medical Journal*, 1857, vol. ii, p. 241. By Dr. Henry Earley. Poisoning by the seeds.

CASE 1.—My attention was called to the case of a child, æt. 2 years, at 5.30 p.m., May 10th, described as being affected with a "sudden coldness in a very extraordinary manner." On visiting

the child the following symptoms were observable : great excitement, the skin hot, and presenting a bright scarlet efflorescence of a lobster colour, somewhat raised above the plane of the cuticle, and rough to the touch ; eyes of glassy brilliancy, with the pupils much dilated ; head very hot ; pulse rapid ; abdomen tympanitic ; great thirst, attended with considerable constriction of the muscles of the throat in attempts at swallowing (this symptom, the constriction, was observed in four of the severe cases) ; tongue much furred ; great cerebral disturbance, accompanied with starting, muttering, occasional screaming, and catching at imaginary objects ; very anxious expression of countenance ; frequent maniacal paroxysms, alternating with moaning, apparently occasioned by the condition of the epigastrium and the abdominal distension. Emetics and purgatives were given, upon which the lymphatic condition quickly subsided, and the stage of excitement passed away, succeeded, however, by a state of depression and strong comatose tendency.

The maniacal symptoms did not entirely disappear till midnight which was the seventh hour from my first seeing the case. Slight startings and muscular twitchings persisted for several days, and the bowels and bladder required attention.

CASE 2.—A girl, *æ*t. 3½ years. I found her in her mother's arms, moaning, and complaining of pain at the epigastrium, her face presenting a suffused redness, eyes glassy bright, pupils dilated, starting, twitching, and tympanitic state of the abdomen. Emetics were given.

Other Cases.—Seven out of the fifteen children in the Institution had brilliancy of eyes, not very remarkable in some, but in others a rapid dilatation of the pupil was observed. Emetics were given to the remaining five, with other treatment. In all the same symptoms were present, but in different degrees. All had the roughness and redness of skin, especially on the face and trunk, the peculiar brilliancy of eye, dilated pupil, abdominal distension, and epigastric tenderness, and constipation. Some had twitchings, startings, catching at imaginary objects, and the symptoms of cerebral disturbance recorded in the first case. In all the graver cases the stage of excitement was succeeded by excessive drowsiness and depression of pulse, with much prostration. The youngest child was 2 years old, the others ranged from that to 9 years. In all there was more or less of

temporary muscular paralysis, accompanied by retention of urine in different degrees.

72. *Dublin Medical Press*, 1857, vol. xxxvii, p. 55. By Dr. G. T. Elliot.

Copied from *New York Journal of Medicine*.

October 11th, 5 p.m.—A boy, æt. 4 years and 5 months. Skin very red, very hot, and moist; expression of countenance wild and staring; pupil nearly fully dilated and utterly insensible to light,—a lighted candle could be so held as almost to singe the eyelids without inducing contraction of the iris or attracting the boy's notice; patient so wild and restless as to be controlled with difficulty, and in raging delirium biting with fury at those who restrained him. Unable to stand, and yet plunging in a restless manner in whatsoever position he could be placed, all the movements being ill-co-ordinated, and resembling those of chorea. The pulse more rapid than I could count. His respiration greatly hurried, and at times gasping and choky; constantly talking, and yet unable to articulate a syllable, while from the expression of his face and movements he seemed at times to be chasing or fleeing from imaginary objects. I learnt that his flushed face had first attracted the matron's attention, and on noticing that there was no perspiration she watched him, and soon found him staggering and behaving as though intoxicated, when she heard that he had been playing with the *Stramonium* plant about an hour and a half before. Just before I arrived he had vomited some undigested food and about thirty seeds of *Stramonium*. He had passed water, but had no movement of the bowels. Gave a teaspoonful of mustard in water, which caused him to gasp in a somewhat alarming way, but was promptly ejected with some more seeds. Gave alum and warm water, which acted emetically.

6 p.m.—Called the matron "a nasty thing" distinctly, otherwise no change. He then slept till 8 p.m., with much jactitation and restlessness, and had one large movement of the bowels unconsciously; when he awoke his skin was comparatively cool, and the pulse 150; pupil the same; no apparent thirst; restlessness, intolerance of control, and chorea-like movements continue. 9 p. m.—Has had two more stools, one quite copious, a few seeds in the second. 11 p.m.—Pupils answer slightly to the candle

held as before, and child conscious of its presence, and afraid of its proximity; has had two more stools with a few more seeds; can articulate pretty distinctly; can stand, and has taken three steps; chorea-like movements persistent, and when not aroused lies in a state of mild delirium; sings, talks, fancies there are dogs in the room, which he describes and attempts to chase, springing suddenly to his feet, and as suddenly toppling over; sometimes tells of events of the day as though they were now taking place. 3 a.m.—Has had two stools with more seeds; passed water twice, once very freely; thirsty. More conscious, gained in distinctness of articulation, coherence of speech, and co-ordination of movements, though still restless. 10 a.m.—He slept till 5 a.m. with about the same amount of jactitation, and on waking had a stool containing some twenty seeds; at 8 a.m. another containing a few more, and then slept peacefully. Is now perfectly conscious; voice and articulation natural; face still markedly red; pupil somewhat dilated; pulse 120. Pupil did not resume its natural state till the 14th.

73. *Dublin Medical Press*, 1859, vol. xlii, p. 214.

Case copied from *Australian Medical Journal*. See original above.

74. *Dublin Medical Press*, 1860, New Series, vol. i, p. 80. Reported by Dr. T. L. Maddin.

Copied from the *Southern Medical Journal* (U. S.). Poisoning by the seeds.

A girl, æt. 4, had eaten her dinner in apparent good health; in an hour afterwards was found in the yard not able to stand, staggering, falling, and striking about at random, talking incoherently, a vacant bewildered expression, with the pupils dilated to the full extent of the colored portion of the eye, and totally blind. I saw the child in about half an hour afterwards, and found her with all the above symptoms in their extremest degree. The face was of a scarlet hue, the conjunctiva of both eyes engorged with blood; the iris could not be seen, so great was its dilatation; the retina entirely insensible to light. An incoherent delirium, imagining herself surrounded by objects that had no existence; her vagaries were of a pleasant character, and created great merriment with the other children present. Sub-

sultus tendinum, picking about the bed-clothes, and groping at random around her; the pulse imperceptible, and the extremities cold. By no process could I induce vomiting, so insensible had the stomach become. At first the child would swallow any amount of fluid, no matter how nauseating, warm or cold, all indifferently, but without the slightest perceptible effect. The jaws after a time became so rigid that it was impossible to give anything, the symptoms all the while assuming a graver character.

Half a drachm of laudanum was given by the rectum. In about half an hour a narrow portion of the iris could be discovered. The enema was repeated five times, and each time with good effect, with more contraction of the iris, and returning consciousness, the child becoming more composed, the delirium yielding, the expression more natural, the sight returning, the scarlet flush gradually vanishing, the circulation better, the extremities warmer, and recognising and answering questions correctly. She continued dosing pleasantly for the next thirty-six hours. The pupil remained dilated during this time about two thirds the size of the coloured portion of the eye.

75. *Dublin Medical Press*, 1860, New Series, vol. ii, p. 21.

Anderson's case copied from *Edinburgh Medical Journal*. See above.

76. *Dublin Medical Press*, New Series, 1862, vol. ii, p. 315.

Lee's cases from *American Journal of Medical Sciences*. See above.

77. *Dublin Medical Press*, New Series, 1862, vol. vi, p. 374.

CASE 1.—Reported by Dr. Liegey from *Journal de Chimie Médicale*. Poisoning by the seeds.

September 3rd, 5 p.m.—A girl, æt. two years and four months. She was crying, and in an almost convulsive state of agitation; her body was covered with an erythematous or rather scarlatiniform blush; her skin was hot and dry, and her pulse febrile; had pain in the throat. She had gone out at 1 p.m., and at 4 p.m. her mother was told that she was ill on the road and unable to walk, and the woman some minutes after found her in the condition in which I saw her.

The following particulars were afterwards learned. On Sep-

tember 3rd, in afternoon, eight or ten children ate some seeds. The greater part vomited them immediately and did not experience any further inconvenience of importance. It was thus with the eldest of the three children of the mother of the patient just referred to. The boy next in age, besides vomiting immediately after taking the poison, had during the next night an attack of delirium, which caused him to fall out of bed. To the youngest (the one brought to me), who had not vomited, they gave an emetic; a long time elapsed before vomiting took place, and when it did occur it was attended with great pain, and was repeated several times; it was also accompanied by diarrhoea, and the patient, after suffering from violent colic, was attended with convulsions and delirium, followed ultimately by coma, which towards 3 a.m. terminated in death. One other child was seriously ill for a fortnight.

CASE 2. By Dr. J. Larquet. Copied from *Gazette des Hôpitaux, et Journal de Pharmacie*.—Poisoning by the seeds.

September 1st, 11 p.m.—A girl, æt. 4, was said to have been ill three or four hours. When I saw her, her cheeks were bright red, her pulse very rapid; the pupils in the highest possible state of dilatation, and her expression haggard and wandering. The child was insensible to the caresses as well as to the affectionate words of her mother. Her thirst was excessive, and she clasped convulsively the glass in which any drink was administered when they desired to remove it from her. Her belly was swollen, her cries inarticulate, and the movements of all her limbs unrestrained. She was apparently suffering from some hallucinations, for sometimes her looks were fixed, and then her hands seemed as if pushing away a fanciful vision. There were neither stools nor vomitings, and at times there were moments of repose. The child had come home about 7 p.m. When she was taking her meal the symptoms already described appeared, and from that time had continued to increase. An emetic and purgative were [given. After several stools she had disturbed sleep the greater part of the next day, and on the next was well.

78. *Dublin Medical Press*, New Series, 1864, vol. ix, p. 597.

Dr. A. Paul Turner's cases copied from *American Journal of Medical Sciences*. See above,

79. *Medical Press and Circular*, 1869, vol. vii, p. 261. Reported by Dr. J. F. Truman.

Copied from *Chicago Medical Journal*.

A mother and two daughters had taken the seeds for ague, by mistake. When first seen the mother and one daughter were raving like maniacs, while the other was rapidly sinking into coma.

All cured by *Opium*.

80. *Transactions of the College of Physicians of Philadelphia*, 1793, vol. i, part 1, p. 198. Reported by Dr. Moses Bartram to Dr. Benjamin Rush in a letter.

[This case is apparently different from Rush's case referred to above.—E. W. B.]

A child, æt. 3, had eaten the fruit and seeds. It was seized with insanity, or rather idiotism, suddenly, without fever. When seen a few hours afterwards, the child was to all appearance happy, talking all the incoherent nonsense that can be imagined, laughing, and in constant motion; but laboured under so great a debility, that it could not stand or walk without tottering, and several times in attempting it fell down. It was a perfect *delirium mite*. I had seen several such cases from eating the seeds. I immediately gave a large dose of tartar emetic, recollecting that in the former cases there had been a great insensibility of the stomach; but without effect; warm water caused vomiting, and the child recovered.

81. *Journal of Psychological Medicine*. By Dr. Winslow, 1848, vol. i, pp. 301—3.

This only contains references and extracts to cases already given.

82. *Ranking's Half-yearly Abstract of Medical Sciences*, 1862, vol. xxxv, p. 385.

Lee's cases quoted. See original above.

83. *Ranking's Half-yearly Abstract of Medical Sciences*, 1869, vol. 49, p. 117. By Dr. J. J. Hillary.

Copied from the *Dominion Medical Journal*, Nov., 1868.

A man, æt. 40, subject to asthma, took a teacupful of "herb tea," which proved to be *Stramonium*. In about five minutes he became wild, and did not know any one. When I got to the house (in about ten minutes) I found him seated in a chair, leaning forward on his knees, shivering, staring wildly, countenance bathed in perspiration, pupils largely dilated, talking wildly, and perfectly unconscious of surrounding objects; pulse 90, and full; hands and arms convulsed every few moments, legs unable to support his body, and dragged after him when we tried to get him to walk. Gave an emetic, but he either could not or would not swallow it, then gave it through a catheter; in twenty minutes he vomited freely. He remained in a state of stupor, with the convulsive movement of the arms for about twelve hours, then fell asleep for six hours, and woke sensible, feeling "very queer," and complaining of his throat being sore and a difficulty in swallowing. His pupils continued dilated for several days.

84. *Madras Quarterly Journal of Medical Science*, 1862, vol. v, p. 320.

A woman had taken some leaves of *Datura* (? *Stramonium*). High delirium, furious, unmanageable, talking in an incoherent manner, and inclining to be abusive in her language. She could not be restrained in one position, but was rolling about in the verandah as if she was blind. The head was hot, and, if I remember properly, the pupil was contracted, and the pulse quick.

A man took an infusion of *Datura* leaves, at 7 a.m., for an attack of dysentery. He then went to bed and never woke till 11 a.m. He was then drowsy and incapable of understanding what was going on around. When brought to the dispensary he appeared as if under the influence of spirits, with strong fever.

A scruple of *Ipec.* was given with great difficulty, the jaws requiring to be opened forcibly with a stick, as they were firmly clenched; neither the *Ipec.* nor a grain of *Tartar emetic* produced vomiting, which was at last effected by ten grains of *Sulphate of Zinc*.

The patient was dull, sleepy, and stupid for two or three days, with remains of the fever and excitement.

85. *Madras Quarterly Journal of Medical Science*, 1863, vol. vi, pp. 286-95. By Dr. Shortt.

CASE 1.—A man, æt. 41, left his house at 6 a.m. Returned home at 8.30 a.m., when he grew giddy and fell to the ground. On being questioned, said he had eaten *Stramonium* leaves, soon after he grew violently delirious, and died comatose at about 9.30 a.m.

Post-mortem.—Face and eyes covered with a white foamy secretion, which was escaping by the mouth and nostrils; eyes glassy; pupils dilated; face bloated; heart empty and flaccid. Mucous membrane of stomach greatly congested throughout its extent, more particularly along the great curvature. Duodenum empty. Mucous membrane of intestines congested throughout its extent, but less than stomach.

CASE 2.—A girl, æt. 14, ate a third of the seeds of one of the fruits. On admission at 7.30 p.m. she had a wild appearance, was stupid, and unconscious of her state; when roused she gave a foolish vacant look around. Pupils widely dilated; a glairy saliva dribbling from the mouth; skin warm and dry; pulse 65, slow and full. Half a scruple of *Sulphate of Zinc* was given without causing vomiting; the stomach-pump was then used. Was soon well. Patient said she ate the seeds about 8.30 a.m. She returned to the house about 9 a.m., and on entering staggered and fell. When asked, she said she had eaten *Stramonium*; this was all she remembered. Her mother gave her medicines, but she continued dull and stupid the greater part of the day till brought to the dispensary. Part of the day she was unmanageable and talked wildly, so that her mother had to give her the medicine by force.

CASE 3.—A girl, æt. 18, ate *Stramonium* early in the morning. She became giddy, and staggered. Gave emetics without effect. In about an hour she became delirious, commenced tossing about, picking her clothes, and talking incoherently. About 9 a.m. convulsions set in and she died in one at 10 a.m.

Post-mortem.—Incipient decomposition. Abdomen slightly distended; face bloated; eyes dull; pupils dilated; a frothy fluid oozing from mouth and nose. Scalp and membranes of brain highly injected; brain firm; puncta vasculosa large and prominent; ventricles empty. No fluid about base of skull; brain appeared dry and firm, and of a peculiar greyish-white

colour. *Heart* small, flaccid, and empty. *Stomach* nearly empty, and mucous membrane along its sides much congested, more particularly along the great curvature.

Remarks on the above cases.—In both fatal cases the *post-mortem* appearances were nearly alike. The countenances full and bloated, pupils widely dilated, oozing of a frothy fluid from mouth and nostrils, hearts empty and flaccid, mucous membrane of stomach highly, and that of intestines slightly, congested. In Case 2 pupils were widely dilated, and saliva, but not frothy, flowed from the mouth.

CASE 4.—A woman took *Stramonium* between 10 a.m. and 4 p.m. At the latter time she was brought home by a friend who found her wandering in the bazaar. At the sight of her mistress she first began to cry, endeavoured to hide herself, and was afraid of every one who approached her. She picked at the air with her fingers, sometimes was laughing, at others crying and rushing away to hide herself as if apprehensive of some evil. Her countenance was wild; pupils dilated; tongue dry and white; pulse slow and moderately full. After a cold douche, slept soundly and woke well next morning. Once she attempted to speak, but her tongue failed her. She remembered nothing afterwards, not even her wandering in the bazaar.

86. *Half-yearly Abstract of Medical Sciences*, 1848, vol. vii, p. 354.

Dr. Stobo's case reported. See original above.

87. *Half-yearly Abstract of Medical Sciences*, 1861, vol. xxxiii, p. 276.

Cases of Anderson and Maddin reported. See originals above.

88. *Monthly Retrospect of the Medical Sciences*, 1848, vol. i, p. 52.

Effects of *Datura Sanguinea* from Tschudi's *Travels in Peru*. See original work.

89. *British and Foreign Medico-Chirurgical Review*, 1852, vol. ix, p. 278.

Girard's case quoted. See above,

90. *British and Foreign Medico-Chirurgical Review*, 1857, vol. xix, p. 260.

Experiments of Professor Schroff. Copied from *Wochenblatt der Zeitschrift der Gesellschaft der Aertze zu Wien*, June 16th, 1856. In the physiological experiments on the human subject with *Atropia* and *Daturia*, the efforts to move were uncommonly heightened, and even amounted to a desire for fighting, in spite of the weakness of the extremities.

91. *British and Foreign Medico-Chirurgical Review*, 1857, vol. xix, p. 497.

Elliot's case quoted. See above.

92. *British and Foreign Medico-Chirurgical Review*, 1862, vol. xxix, pp. 540, 541.

Cases of Buckingham, Harris, and Liegey referred to. See above.

93. *British and Foreign Medico-Chirurgical Review*, 1863, vol. xxxii, p. 537.

Dr. Shortt's cases. See original above.

94. *British Medical Journal*, 1866, vol. i, p. 523.

Translated and possibly abridged from Dr. Kuborn's report of four cases in the *Annales de la Société Médico-Chirurgicale de Liège*.

Headache, agitation, chronic trembling of the arms, dilatation of the pupils, weakness of sight, dry red tongue, strong tumultuous pulse, and finally collapse. Next day (after bleeding, purgatives, and emetics) pulse was soft, 115; pupils remained much dilated; marked insensibility, and continuous delirium; the patient had not been able to vomit, but had had several evacuations. Next day, the only symptoms remaining were extreme lassitude, muscular weakness, and disorders of vision.

Two children had choreic-like movements, which disappear after taking strong coffee.

95. *The Doctor*, 1834, vol. ii, p. 361.

An editorial article.

By holding the plant to the nose for some time, or sleeping in a bed where the leaves are strewn, giddiness of the head and

stupor are said to have been produced. A man, æt. 69, labouring under a calculous complaint, by mistake boiled the capsules of *Stramonium* in milk, and in consequence of drinking this decoction was affected with vertigo, dryness of fauces, anxiety followed by loss of voice and sense; the pulse became small and quick, extremities cold, limbs paralytic, features distorted, accompanied with violent delirium, continued watchfulness, and a total suppression of all the evacuations, but in a few hours he recovered. [No reference is given to this case to show whether it is original or not.]

Dr. Haygarth's cases of children poisoned by the seeds are quoted, "Blindness, and a kind of madness, biting, scratching, shrieking, laughing, and crying."

96. *The Doctor*, 1834, vol. iii, p. 44.

Amelung's remarks quoted. See above.

97. *The Doctor*, 1835, vol. iv, p. 85.

Bartram's cases reported to Rush quoted. See above.

Quotation from *Fritish*, "A quantity of it was eaten by a number of the servants of a Baron de Salvador, all of whom were affected with a *delirium mite*."

The case quoted in vol. ii is again quoted here.

98. *Pharmaceutical Times*, 1847, vol. ii, p. 311.

Effects of *Datura Sanguinea* quoted from Tschudi. See above.

99. *Pharmaceutical Journal*, new series, 1862, vol. iv, p. 158.

Cases of Dr. Liégey and Larquet quoted. See above.

100. *Edinburgh New Philosophical Journal*, 1847, vol. lxii, p. 384.

Effects of *Datura Sanguinea* from Tschudi. See above.

In a work by M. C. Cooke, called the *Seven Sisters of Sleep*, symptoms of *Stramonium*, *Agaricus*, *Opium*, *Erythroxylon*, &c., are given.

101. *Supplement to the Edinburgh New Dispensary*. By Dr. Andrew Duncan, 1829, pp. 49, 50.

This contains an abstract of M. Barbiér's experiments, published in the 2nd edition of his *Traité de Matière Médicale*, Paris, 1824, vol. iii, p. 415. A few symptoms have been already very imperfectly quoted at p. 10 of the *Pathogenetic Record*.

(1) An old man suffering from pains in right shoulder and leg, and permanent contraction of right arm, took the powder of the leaves of the *Datura Tatula*. 1st day.—Took 12 grains in two doses. 2nd day.—A scruple; colic pains; frequent stools; dryness of mouth and fauces; fear of inability to swallow; pain in temples; opening of eyelids contracted; pupils dilated; vision disturbed, cloudy; no sleep; agitation; pain in head and right arm. 3rd day.—The same dose; colic; appetite; slight headache; pain in the temples; micturition easy; bad night, with agitation. 4th day.—Half drachm; in the morning troubled and extremely weak vision; at noon left eye natural, but right eye blind, and all the right side more affected. 5th day.—The same dose; colic with stools; difficulty in making water; no headache or oppression; no determination to the head; face rather pale; right eye still affected. 6th day.—The same dose; sleep disturbed; great headache during the night; weight of head after noon; urine scanty and voided with difficulty; dryness of mouth continues; appetite; singular expression of countenance; eyes seem smaller. 7th day.—No medicine; vision of right eye still disturbed. 8th day.—Cheerful, the effects having soon passed off. Took 158 grains in six days.

(2) A man with neuralgia of right side of face took 9 grains of the powder in pills daily in divided doses, morning, noon, and evening. In evening great dryness of mouth and throat; pupils dilated; apparent dryness of surface of eye; no dejection; good night. 2nd day.—12 grains; dryness of mouth; constant thirst; slight colic pains; appetite; eyes drier and irritated; agitated night; no sleep; pulse commonly quick; neuralgic pains during the day only. 3rd day.—18 grains; great dryness of mouth; thirst; colic; three stools; micturition slow; gusts (bouffées) of heat towards the head produce threatenings of syncope; pain in left side of head; no cephalic congestion. 4th day.—24 grains; symptoms continue. 5th day.—24 grains; cannot distinguish objects; conjunctiva red and irritated; singular expression; pain in limbs; cannot keep himself up; no weight of head; calm sleep part of the night; good appetite. 6th day.

—30 grains; no weight of head, but great weakness of limbs; no depression; sleep agitated; eyes irritated; painful pricking over all the body during the night. 7th day.—36 grains; no neuralgia for some days; effects increased. 8th day.—45 grains. 9th day.—45 grains; some oppression of head, which is heavy, especially when the rushings of heat to the head take place; muscular strength annihilated; good appetite; difficult micturition; sleep disturbed by dreams; transient blindness. 10th day.—Medicine discontinued. 12th day.—Feebleness of limbs continues with dryness of mouth and throat. 13th day.—Only weakness of limbs, which lasted some days longer. Took 243 grains in nine days.

(8) A man affected with trembling of limbs and fainting after great mental distress, and occasionally epileptic fits, took the drug, beginning with 6 grains, gradually increasing to 15, with occasional omission of the remedy. When it was omitted his nights were calm and he rested quietly in bed; but when it was given the patient fell into a state of agitation, grew delirious, and got out of bed.

102. *Medical and Physical Journal*, vol. xxxv, p. 338.

Translation of a report by Dr. Paulitz.

In a case of insanity and palsy *Stramonium* caused salivation.

103. *New Sydenham Society's Publications*, vol. xliii, p. 458.

Liégey's cases quoted from *Medical Times and Gazette*, 1867, vol. i, p. 466. See above.

104. *New Sydenham Society's Publications*, vol. xix, p. 466.

Case reported by Flögel. *Wien Med. Halle*, vol. ii, No. 42; *Schmidt*, vol. cxiv, p. 23. See above, Case 56.

105. *New Sydenham Society's Publications*, vol. xxiii, p. 419.

Dr. Shortt's cases referred to from *Madras Quarterly Journal of Mental Science*, 1863, p. 286. See above.

106. *New Sydenham Society's Publications*, vol. x, p. 457.

Case of poisoning reported by Löwenstein in *Med. Ztg. Russlands*, No. 9, 1860, referred to. No symptoms given.

107. *Chemist*, 1851-2, New Series, vol. iii, p. 142.

Cases referred to in *Journal de Pharmacie et de Chimie*, October, 1851.

108. *Chemist*, 1845, vol. vi, p. 232.

Spence's cases mentioned. See original above.

109. *The Medical Museum* (London), 1781, 2nd edition, vol. i, p. 446.

Stoerck's experiments. See above.

110. *Medical and Physical Journal*, 1799, vol. i, p. 84.

The seeds produce unusual pain and anxiety; convulsive motions; apparent dread or aversion to fluids; vesications on the skin after the violent symptoms have subsided; large and involuntary discharges of urine.

Reference is also made to Dewitt's case. See above.

111. *Medical and Physical Journal*, 1799, vol. i, p. 278. Reference to "Medical Observations on the Virtues and Properties of the Seeds of *Stramonium*," by Dr. Alexander King, of Connecticut.

If taken in large doses it produces the following symptoms:—The sight is first affected; pupils dilated; vision indistinct and confused; objects seem multiplied, diversified, and variously coloured; cannot see clearly; cannot see small objects, such as the point of a pin or needle; sees objects which do not exist in the room; numbness of head with vertigo. Falters in pronunciation; tongue paralysed; when he tries to put it out he imitates the motion of a person who tries to do the same in a nervous fever; various parts of the body become paralysed. Then the imagination is confused and disturbed with fear. Terrifying apprehensions perplex the mind, and impress on the countenance the image of this passion.

112. *Medical and Physical Journal*, 1816, vol. xxxv, p. 338.

Case by Dr. Purlitz. *Stramonium*, given for paralysis, caused salivation.

113. *British (Association) Medical Journal*, 1854, vol. ii, p. 1064.

Case referred to in *Journal de Chimie Medicale*, August, 1854.

(APPENDIX B. J. H.)

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114. Ennemoser's *History of Magic*, translated by William Howitt, in Bohn's scientific library.

Acosta states that the Indian dancing girls drug wine with the seeds of the *Datura Stramonium*. He who partakes of it becomes perfectly unconscious. He often, however, speaks with others, and gives answers as if he were in full possession of his senses, though he has no control over his actions, is perfectly ignorant of whom he is with, and loses all remembrance of what has taken place when he awakes. (See *De Opii Usu*, Doringio, Jen., 1620, p. 77.)

FORMICA.

Philosophical Magazine, 1800, vol. vii, p. 152.

Translated from a paper by M. Amoureux, jun., M.D., from *Notice des Insectes de la France réputés venimeux*.

[This work should be referred to for other cases.—E. W. B.]

“One of our most learned naturalists, going along the banks of the Niger, found himself invested by a sort of red ants which lodge in the *icaco* tree. The punctures they made were so venomous, says he, that my hands and face were covered with blisters similar to those arising from burning, the pain of which could be allayed by nothing but a heavy rain, which took place in the evening.”

Experiments by M. Roux, editor of *Journal de Medicine*, are referred to. He says, if an ant hill be opened, and a living frog exposed in it, it will die in less than four or five minutes, though it has not been bitten by the ants. M. Roux, being employed in collecting ants, perceived in the evening that his fingers were somewhat hot, that they swelled and became red; next day the epidermis separated from the skin as if he had applied a vesicatory, and his fingers became entirely peeled.

The acid vapour of ants is capable of suffocating them when they are shut up in a bottle.

M. Thouvenal, having collected some ants, found that large vesicles full of serous liquor were formed at the ends of his fingers.

A case is also quoted from *Ephemerides of the Curiosities of Nature*, December 2nd, 1688. A man had for a long time been

tormented with pain in his head; medicine had done no good, so he had left it off. One day while collecting ants his hands were excoriated by their acrid liquor; he was immediately freed from the pain in his head, which never afterwards returned.

MYRISTICA OFFICINALIS (NUX MOSCHATA).

1. *London Medical Gazette*, New Series, vol. vi (1st vol. of year 1848), p. 260. Reported by Dr. C. Watson. Copied from *Provincial Journal*.

The patient took about as much mace as could be lifted on a teaspoon if broken small, about 11 a.m. He described his symptoms as follows:—"About 12.30 p.m. I felt a pain on the crown of the head, extending over a space about the size of a penny piece; I also felt a slight nausea of the stomach as if I had been smoking inordinately. I had kept eating the mace in small bits over about an hour and a half. I walked home, and dined about 3 p.m. I still felt the pain slightly on the top of the head, and also the nausea and slight giddiness. I rose from dinner, and looked out at the window to dissipate, if possible, this disagreeable feeling. I then felt the blood rush to my head, but the feeling was as if an electric current had passed from the crown of the head downwards. Not wishing to be overcome in the room where I then was I made an effort and got mechanically downstairs. I then felt the same sensation which I suppose a person would experience who had become nearly insensible from extreme cold, and that if I had yielded myself to its influence I could have slept away out of existence without pain. I felt this sensation twice; the second time when I had got downstairs into the back parlour. I then walked about in the back yard to endeavour to drive away the extraordinary sensations, but in a few minutes a cold shiver came upon me. I then got into the house, and laid myself upon a sofa near the fire. From that time I felt every variety of heat and cold from their respective extremes. At every time the blood went from and returned to my head the current changed the sensation, sometimes feeling myself very hot, and the next very cold, but never the same sensation. I felt at one time

such a pressure in the head that it appeared as if all the blood in the body had rushed to obtain possession of that region, and I thought I could hear it gushing in my ears. These symptoms gradually became weaker. Some brandy was then administered. The effect of this upon me was as if I had been electrified from the roof of the mouth downwards in a straight line, and dying off towards the feet; it then seemed to diffuse itself over the whole body. The state of my body generally felt as if I had had hold of slightly galvanised wires, the wires apparently working in antagonistic directions, out of tune and keeping, like, in fact, so many connecting rods working from excentrics out of truth, and jarring against each other. The state of the mind was, I should suppose, similar to that of the opium eater, entertaining no apprehension of the result, though aware of the presence of some danger. The pulse during the several paroxysms was very varied, being from 70 to more than 100. During the attack I felt every nerve in my teeth, but no pain."

Dr. Watson adds the following:—Præcordial anxiety was remarkable. The feet were cold, and required artificial heat; the head throbbed, eyes looked injected, and the countenance acquired a singular expression, whilst the words he employed to express his sensations seemed selected for their merit of being the opposite to what should have been used. His temporal arteries beat strongly for several hours. The persistence of the intellectual disturbance was remarkable, for on the third day the excited state of the sensorium had not quite disappeared, so that he even then felt himself unable to attend to his office books. His thoughts hardly submitted themselves to his control unless by a consciously great effort.

2. *Pharmaceutical Journal and Transactions*, 1851, vol. x, p. 350.

Experiments by Mitscherlich, translated (and possibly abridged) from *Buchner's Rep.*, vol. xvi, p. 104, year 1850.

Experiments on rabbits.—The volatile oil of nutmegs is a strong poison; six drachms killed a middle-sized rabbit in thirteen hours and a half; two drachms killed a strong rabbit in five days; one drachm killed a small rabbit in about thirty hours; one drachm of the oil injected into the stomach of a full-grown rabbit made it sick and ill for several days, after which it recovered.

The oil of nutmegs is absorbed, and appears to undergo a change in the blood, and passes out in this altered condition in the urine to which it imparts a peculiar pleasant aromatic odour. In the stomach was found extravasation of blood and formation of blood-vessels in the mucous membrane, which was partially softened and devoid of blood without being inflamed in the adjacent parts. The interior of the duodenum was very much divested of epithelium and filled with mucus. In the first experiment with six drachms the stomach and jejunum were injected with blood. The most important symptoms of poisoning were frequent and powerful pulsation of the heart; slight acceleration of breathing; at first restlessness, afterwards weakness of the muscles; little or no diminution of sensibility; evacuation of hard feces from the colon; ejection of a peculiarly smelling sanguineous urine after smaller doses, but no increased diuresis; decrease of strength and of the pulsation of the heart; difficult breathing; diminished heat in the external parts; death without convulsions.

Effect of the oil on the human skin.—The oil was applied to back of hand. After four minutes very slight burning sensation was felt, which gradually increased, so that after fifteen minutes it became very unpleasant, and on being touched the reddened spot caused much pain. After thirty minutes the moistened spot was red; it burnt like after a sinapism when the skin is moderately reddened. Upon being washed the burning disappeared within an hour; the epidermis did not scale off. In a second experiment with another individual the symptoms were much slighter; the burning appeared only after ten minutes, and became rather strong after another ten minutes; the hand being then washed after thirty minutes the burning was still very intense, but the skin was not red. The burning lasted about thirty minutes; the epidermis did not scale off.

3. *Monthly Retrospect of Medical Sciences*, 1849, vol. ii, p. 184.

Abstract of the above experiments from *Schmidt's Jahrbuch*, November, 1848, p. 156.

CARBURETUM SULPHURIS (BISULPHIDE OF CARBON).

1. *Monthly Journal of Medical Science*, 1848, vol. viii (vol. ii of New Series), pp. 740-4. By Dr. J. Y. Simpson.

I have breathed the vapour, and exhibited it to about twenty other individuals, and it certainly is a very rapid and powerful anæsthetic. One or two stated that they found it even more pleasant than chloroform; but in several it produced depressing and disagreeable visions, and was followed for some hours by headache and giddiness even when given only in small doses.

When given in one case in order to remove a tumour of the breast it very speedily produced a full anæsthetic effect; the patient was restless during the latter part of the operation, but felt nothing. Like several others while under it her eyes remained wide open. After the operation she was extremely sick, with much and long-continued headache, and for fifty or sixty hours subsequently her pulse was high and rapid without rigor or symptoms of fever.

It was also given in a case of midwifery at intervals during three quarters of an hour. The patient was easily brought under its influence, but it was found impossible to produce by it the kind of continuous sleep attending the use of chloroform. When given as a pain threatened or commenced it immediately affected the power of the uterine contractions so as often to suspend them; but the state of anæsthesia generally passed off in a minute or two. During its use she was occasionally sick and vomited several times. Latterly her respiration became rapid, and her pulse rose extremely high.

2. *Pharmaceutical Times*, 1848, vol. iii, p. 365.

The above experiments by Simpson quoted.

3. *Pharmaceutical Journal*, 1843, vol. ii, p. 352. By Dr. A. Turnbull.

Remarks of Wutzer referred to. See Wibmer's *Wirkung der Areneitmittel und Gifte*, vol. ii, p. 41; and Adolf Duflos in *Pharmakologische Chemie*, Breslau, 1842, p. 195.

Dr. Turnbull's own remarks:—The vapour when applied to the

eye causes intense pricking, heat, and flow of tears. It generally contracts the pupil and very seldom dilates it.

When it had been applied to enlarged indurated lymphatic glands for about one minute the patient felt the part very cold, but immediately afterwards a gradual heat accompanied with great prickling, the heat increasing the longer the medicine was kept in contact with the parts until it could no longer be endured. On removing the glass in which it was applied the part was red to an extent two or three times greater than the part enclosed. The glands were reduced to their natural size by daily repetitions of this process.

4. *London Medical Gazette*, 1842-3, New Series, vol. i, p. 178.
The above cases of Turnbull's quoted:

5. *Lancet*, 1830-1, vol. ii, p. 329.

Remarks of Wutzer and Pellenham copied from *Journal de Chimie*.

It excites powerfully the activity of the heart and arterial system. Its internal use causes acceleration of the pulse, increased heat, and sanguineous congestion towards the skin and genito-urinary organs. The next remarkable secondary symptoms are abundant diaphoresis, increase of the urinary secretion and of the menstrual discharge.

6. *Lancet*, 1866, vol. ii, p. 267.

Experiments on rats and rabbits by Cloetz quoted (possibly abridged).

The animal having been confined beneath a bell glass, some cotton saturated with the poison was placed along with it. For few moments the animal remained perfectly quiet, but then it commenced to rush about with great violence; soon afterwards it moved about more slowly, and sustained some severe convulsive shocks; then it fell on its side, still breathing slowly, and in five minutes from the commencement it died. The whole substance of the lungs was congested; no lesion of brain; the chambers of the heart were full of blood, the right auricle continuing to contract for two hours after death, and the blood-corpuscles preserved their normal character.

7. *London Medical Gazette*, 1848. New Series, vol. vi, p. 1076.

Experiments by Dr. Snow.

In animals it causes convulsive tremors and narcotism.

Experiment 1.—Two grains were diffused through the air in a jar holding 200 cubic inches, and a white mouse introduced. In three minutes it was altered in its manner, and no longer regarded the approach of the hand towards it. In six minutes tremors came on, which soon became violent, and lasted till after the mouse was taken out at the end of ten minutes; but voluntary motion continued along with the tremors. When taken out it flinched on being pinched; attempted to walk, but fell over on its side; it had no appreciation of danger at first, but it quickly recovered.

Experiment 2.—A common mouse was put into a jar holding 800 cubic inches, in which twelve grains had been diffused. In a minute it began to have convulsive tremors whilst still walking. In half a minute more voluntary motion ceased, but the tremors continued. It was removed at the end of ten minutes, was sensible to pricking and pinching, and in a minute or two began to recover voluntary motion, the trembling of the whole body continuing for a little time after it was able to walk.

Experiment 3.—A white mouse was placed in the jar containing 200 cubic inches with four grains of the poison. It became quickly affected and was lying powerless in less than half a minute. Convulsive tremors came on immediately after it fell, and lasted till death. At the end of four minutes the breathing became difficult, being performed only by distant convulsive efforts. The mouse was immediately removed, but only gave one or two gasps afterwards.

Experiment 4.—A mouse. Two and a quarter grains of poison to each 100 cubic inches of air. After running about for a minute it fell down, and stretched itself violently out and died.

8. *Dublin Medical Press*, 1856, vol. xxxvi, p. 215.

Delpech's remarks from *L'Union Medicale*:

V. D—, æt. 27, in good health, was constantly exposed to the vapour in an india-rubber manufactory. During three months he suffered from violent headache; at the end of this time he was seized with general ~~malaise~~ and intense vertigo, and his sight

became so weak that he was obliged to leave off work in a few hours. His hearing also became affected, and in a week he was so deaf that persons were obliged to shout into his ear to make him hear; this deafness disappeared spontaneously after some time. His memory became so weak that he forgot every minute where were the tools he had just used. His temper also became very changeable; sometimes he was excessively lively, and at others he was angered by the most trifling circumstances, and would break everything near him. He slept with difficulty, frequently not at all; and awoke suddenly under the influence of painful dreams or convulsive starts, accompanied by rigors, heats, and profuse perspirations. Even during the day he was seized with an icy coldness for several hours, which left him in a state of great lassitude. He had severe attacks of colic, frequent indigestion, nausea, vomiting of greenish matters several times in the day, and transient diarrhoea of fetid matters alternating with constipation. There was constant loss of appetite; the mouth was pasty, and expectoration frequent. He became so weak that he was obliged to sit at his work, to use a stick in walking, and to rest at each step in going up stairs. This debility, which affected both the upper and lower limbs, was accompanied by a kind of cramp or transient convulsions in the muscles of the hands, which, for a short time, deprived him of the use of his fingers. The sexual appetite was altogether lost. His wife, when she was in the habit of remaining with him in his workroom, was also seized with headache and muscular debility. She fell into a state analogous to that of her husband, but much less severe. His young child after passing three days in the workroom was seized with a kind of curious delirium and attempted to bite his parents. In March of the next year (1854) the symptoms of the man continued as described. He was emaciated, very pale, and his breath smelt of the sulphide. He could walk only with a stick; he had severe pains in the limbs, which were much diminished in size, especially in the muscular parts. His hands were in a state of pronation, and hung down from the greater debility of the extensor muscles; the flexors, however, were themselves weakened. Muscular contraction was feeble and tremulous. He could not close his hand with any force, and when the arm was kept extended for a few seconds the fibres of the muscles quivered very remarkably. Sensation was

perfect, as was also the contractility of the muscles under electricity. His intellect did not appear altered; he was only somewhat vague. There was a very marked intermittent *brûit de souffle*. He had frequent slight attacks of coughing. Treatment relieved him; he observed that the solar light and warmth removed the pains in his limbs.

9. *American Journal of Medical Sciences*, 1848, New Series, vol. xvi, p. 233.

Simpson's remarks quoted. See above.

10. *Medical Times and Gazette*, 1868, vol. ii, p. 77. By Dr. George Kennion.

After it has been applied externally for a minute or two, a sensation is felt as if several leeches were biting the part, and after the lapse of two to four minutes more the smarting and pain become rather severe. It is very reldom that any redness of skin is produced.

Delpech's remarks in *Annales d'Hygiène*, January, 1863, are mentioned. See below, No. 12.

11. *Transactions of Provincial Medical and Surgical Association*, 1849, vol. xvi, pp. 167—381. By Thomas Nunneley.

1. A cat was placed in a gallon and a half jar containing ten minims of *Bisulphide*. She immediately began to struggle most violently, and made the most determined attempts to escape for nearly a minute; she then sat still, with occasionally turning round, and appeared dull, with saliva dropping or even running most copiously from the mouth; at first it was quite clear and pellucid, but afterwards became thick and frothy; in fifteen minutes (the cover being removed) she stepped out of the jar and walked away, but with a very unsteady and feeble drunken gait (like sea-sickness). In a few minutes she vomited freely, which appeared to afford great relief, and her manner became natural, although the heart for some time continued to beat so weakly and quickly that it could not be counted.

2. The same cat, three days afterwards, was put into the same jar with thirty minims of *Bisulphide*. She instantly made the most violent struggles to escape, the sensation produced in the mouth and fauces apparently being most unpleasant; she

gradually became quieter, and in fifteen minutes looked dull and stupid. On being taken hold of she was vicious and scratched my hands. She was kept in for thirty minutes, having by this time partially recovered from her dulness and heaviness, which were the greatest at twenty minutes. She did not lose consciousness or sensation; when spoken to she heard, but looked bewildered and crawled about the room, howling in the most horrible manner possible. This, however, I think at least in part arose from wanting to dung and not choosing to do it in the room, as on being turned out in the yard she at once relieved herself and became much quieter. An hour afterwards she was busy cleaning herself from the effects of the saliva which had flowed so copiously about her; she was very weak, but seemed happy and sought to be noticed.

3. A cat was put in a gallon jar containing forty minims of *Bisulphide*. She instantly made the most desperate efforts to escape, frothed much at the mouth, passed water, then gradually became quiet, and in two and a half minutes was perfectly still. Taken out in five minutes dead; muscles perfectly flaccid; pupils rather dilated.

Post-mortem in twenty-four hours.—Muscles rigid; sinuses and vessels of the brain full; lungs rather red, but not much congested; a little brick-red fluid blood in all the cavities of the heart, but none of them were at all distended, neither were the *venæ cavæ* or pulmonary veins; pulmonary artery and aorta were empty.

4. A kitten was placed in a jar of 240 cubic inches with twenty minims of *Bisulphide*. It was almost immediately affected and tried *very* hard to escape; it became weak and unable to stand, cried much, and appeared distressed; the nose was red, and the saliva flowed freely; it was much convulsed. The limbs were rapidly moved with a pawing motion. At five minutes, when taken out, it was unconscious and nearly insensible. There was some muscular power retained; the heart beat very feebly. On being taken out it was purged. It soon improved, and in six minutes after it could walk, though very unsteadily; however, consciousness was restored, and in a short time it was well.

5. A rabbit was exposed to the same conditions as the last. It was almost instantly affected; it was also much distressed and

similarly affected to the last case. In three minutes it cried for some time in a low whining tone. When taken out at eight minutes, it was perfectly unconscious, insensible, and all reflex action was lost. The heart beat very rapidly and feebly; all other muscular power seemed lost. At three minutes after removal it convulsively rolled over and over; reflex action had now returned. In fifteen minutes consciousness and sensation had returned; though unable to stand, it could support itself upon its belly, and in twenty-five minutes it could just stand. In one hour and a half it appeared quite restored and ate its food; but the next day it was dull and would not feed, and at the end of twenty-four hours it died.

6. A sparrow was put into a ninety cubic inch jar with five minims of *Bisulphide*. After two minutes it suddenly fell upon the side, with the eyes shut, and a constant and rapid fluttering of the wings, the legs being perfectly still; it remained in the jar for six minutes. When taken out it was not nearly so sleepy as the birds which had been in ether or oil of wine; the legs, however, were still and altogether motionless, there being a little motion in the wings. After fifteen minutes it looked about and noticed things. On being thrown into the air it could use the wings but not the legs; in half an hour it could just hop, and when put upon the perch sat; it was immediately asleep and so remained when left for the night two hours afterwards. Next morning, it lay dead, cold and rigid at the bottom of the cage.

7. A large frog was put into a jar of fifty-six cubic inches with five minims of *Bisulphide*. He instantly made great efforts to escape, which he continued for three minutes, gradually, however, becoming feeble; he now became perfectly motionless, and in five minutes, when taken out, there was neither consciousness, sensation, nor reflex action; in fact, he appeared dead. He was laid on the table on his back, when the least fluttering of the heart could be felt; this increased in frequency and force without his stirring until half an hour, when he suddenly raised his head, turned over, in a few minutes jumped about, and soon appeared as well as ever.

8. Another frog was placed in a similar jar containing ten minims of *Bisulphide*. He was affected in every way in exactly a similar manner to the last. When taken out in five minutes he lay as though dead; in three minutes, on being turned over

he slightly moved one hind leg, then both, the skin becoming covered with a frothy exudation. He now lay for three quarters of an hour without stirring or breathing, when he began to respire. In an hour, reflex action had returned; in one hour and a half, when left for the night, he was conscious and the limbs were not quite so flaccid, but he could not move them, so it was difficult to say if there were any sensation. Next morning he could move pretty well and recovered.

9. A black slug (*Limax ater*) was put into a six-ounce jar with four drops of the *Bisulphide*, and allowed to remain for five minutes. It immediately rolled about, shrunk up, and threw out a large quantity of mucus. On being taken out, it was not altogether insensible to pricking. It lay still for nearly an hour, then gradually recovered. The next morning it was still, dull, and contracted. During the day it died.

10. Two cockroaches were put in an ounce jar containing two minims of *Bisulphide*. They became immediately affected, seemed distressed, and their bodies became covered with a white creamy effusion; in two minutes they were nearly motionless, and in four they were dead.

11. Two young dogs had respectively fifteen and thirty minims of *Bisulphide* given internally. There was not any anæsthesia, but great distress. The tenesmus was distressing, with considerable prolapsus; the protruded membrane was excessively red and covered with mucus.

12. Two young cats had respectively five and ten minims given internally. The symptoms were exactly the same as in the last-mentioned case, except that in the one that had the largest dose the prolapsus was very considerable, and the tenesmus very excessive. The next morning, sixteen hours after, at least two inches of the entire circle of the gut was protruding, as congested as possible, with constant tenesmus and great contraction of the abdominal muscles.

13. The hind leg of a frog was put into a phial with half a drachm of *Bisulphide*. It made most violent efforts to escape, and the leg soon became covered with white mucus. When removed at five minutes, it jumped away quite vigorously. Though the limb was much weakened, motion was not altogether lost nor was sensation.

14. Six frogs, which had been subjected to the local action of

Oleum æthereum and their limbs amputated, were lying in a large jar apparently nearly dead, only just breathing, when five drops of the *Bisulphide* were put in; they *instantly* started up and jumped rapidly about with great force for a minute, when they became perfectly quiet and were not observed to stir afterwards.

15. The hind limb of a rabbit was put into an ounce jar with forty minims of the *Bisulphide*. It immediately cried out loudly, and made great attempts to escape as though in considerable pain. After two minutes it lay perfectly still and easy until fifteen minutes, when it again struggled hard, apparently being excited by hearing another rabbit move about the room. It was then still until thirty minutes, when it again struggled violently and cried loudly; it, for the most part, then lay still, with occasional moanings, until taken out at the end of an hour. There was no general affection; the limb had very little power, and it hopped about the room on three legs, and the limb remained in whatever position it was placed in. Near to the heel there was some sensation, but none whatever in the toes. One of them was cut off in two portions; the web between the others and the pad at the sole of the foot were pierced without any manifestation of feeling. Seven hours after, the whole limb was soft, swelled, hot, and tender; it could be moved, but in jumping about it was not used.

16. The hind leg of a kitten was put into a two-ounce jar with one drachm of *Bisulphide*. During the whole hour it was kept in it struggled hard, and made great attempts to get away; it appeared pained. When removed the limb was, to a great extent, useless; it was swelled and hot; sensation was not destroyed, though blunted; there was no general affection. The next day the limb was much swelled and very tender; it could not be used from the inflammation which was very intense and continued several days, the kitten appearing to suffer considerably. Every particle of the hair of the part which had been immersed came off, and the skin was very sore. The inflammation after several days subsided, and the integument became shrivelled and dry.

12. *New Sydenham Society's Publications*, vol. xxiii, p. 458.

Delpech's remarks from *Annales d'Hygiène*, 1868, January, p. 65.

A stage of excitement is first produced, characterised by headache, pains and cramps in the limbs, giddiness and dimness of sight. The mind is also disturbed; there is loquacity, causeless laughing or weeping, and even mania may occur. Epileptic convulsions have been observed in two cases, and frequently during experiments on animals. The sense of taste is often perverted, everything tasting of sulphur. Menorrhagia is not unfrequent in women, and great excitement of the sexual desire in men. This condition is followed by a period of depression. The symptoms are now the following:

Lowness of spirits, somnolence, loss of memory, anæsthesia of the skin, dim sight and deafness. The sexual functions are especially perverted; there is impotence with loss of desire and power of erection. In a boy who had been employed in the manufactory since the age of ten the testes remained undeveloped. Women, too, lose the same feelings, and very rarely bear children. There is also some reason to suppose that atrophy of the mammæ occurs. Another symptom is muscular paralysis; this is often of a paraplegic form. Numbness of hands is often noticed from the local application.

13. *Dublin Medical Press*, 1856, vol. xxxv, p. 119.

Extracts from *Journal de Médecine et de Chirurgie Pratiques*, February, 1856, p. 68, of a paper read before the *Académie de Médecine* by Delpech.

The workers in caoutchouc, from inhaling *Bisulphide of Carbon*, suffer from the following symptoms:—Anorexia, nausea, vomiting, diarrhœa, constipation, profound disturbance of the understanding, dulness, loss of memory, extreme nervous susceptibility, unaccountable acts of violence; headache, vertigo, derangement of sight and hearing, impotence, various forms of paralysis especially affecting the power of motion.

14. *British and Foreign Medico-Chirurgical Review*, 1856, vol. xvii, p. 520.

The above remarks by Delpech, quoted from *Gazette Médicale de Paris*, January 19th, 1856.

ERYTHROXYLON COCA.

1. *Practitioner*, 1868, vol. i, p. 233.

Review of '*Recherches chimiques et physiologiques sur l'Erythroxyllum coca du Perou et la Cocaine.*' By Thomas Moréno y Maiz. Paris: Louis Leclerc, 1868. 8vo. pp. 90.

Coca causes, according to this observer, tetanic convulsions, hyperæsthesia, dilated pupils, and diminution of movement from loss of co-ordination. This work should be carefully examined.

2. *Edinburgh New Philosophical Journal*, 1836, vol. xxi, p. 382.

Quotation from Pœppig's Travels. See original work.

3. *Edinburgh New Philosophical Journal*, 1847, vol. xlii, p. 301.

Quotation from Tschudi's *Travels in Peru*. See original work.

4. *Pharmaceutical Journal*, 1843, vol. ii, p. 660.

Remarks by Dr. Martius, from *Gauger's Report.*, 1842, p. 452-7.

Its effect is to deaden sensation and produce even madness.

5. *Pharmaceutical Journal*, 1854, vol. xiii, p. 224.

Remarks by Professor Schlechtendal, from the *Encyclopædia of Medical Sciences* by Basch, v. Gräfe, Hufeland, Link, and Müller, 1834, and *Archiv. der Pharmacie*, July, 1853.

It increases the secretion of saliva, produces a sensation of warmth and fulness in the mouth and stomach, stills hunger and increases the bodily activity. It produces in large quantities lassitude, and drowsiness.

6. *Half-Yearly Abstract of the Medical Sciences*, 1861, vol. xxxiii, p. 269.

Extract from a paper by Dr. Mantegazza, also referred to in *Oesterich. Zeitsch. für Prac. Heilkunde*, November, 1859. The original essay should be referred to; the present quotation and others which I have seen appear to be abridgements only.

7. *Chemist and Druggist*, 1871, vol. xii, p. 317.

Remarks by Dr. Scrivener, copied from *Medical Times and Gazette*. See below.

8. *Lancet*, 1866, vol. ii, p. 195. Extract from a paper by Rossi in the *Roman Correspondenza Scientifica*.

Men may live in robust health several days without food. Rossi, after taking a decoction of the leaves, felt neither hunger nor thirst for forty-eight hours.

9. *Medical Times and Gazette*, 1865, vol. i, p. 45.

Review of *Monographie de l'Erythroxyton Coca*, by L. A. Gosse (de Geneve), Bruxelles. 8vo, pp. 144.

10. *New Sydenham Society's Publications*, vol. xix, p. 453.

Experiments by Schroff on *Cocaine* from *Wien Wchnbl.*, vol. xviii, Nos. 30—34, 1862: and *Schmidt*, vol. cxvi, p. 297. (Apparently greatly abridged.)

Solutions of the salts of *Cocaine* with *Hydrochloric* and *Acetic acids* communicate a peculiar sensation to the tongue, and benumb its special sensibility.

Experiments were made with the *Cocaine*, its acetate and chloride, and an alcoholic extract of the leaves.

In frogs, the smallest doses impaired the functions of respiration and voluntary motion; medium doses caused drowsiness, with complete cessation of breathing and a cataleptic condition of the muscles. The contractions of the heart were either unaffected or became more forcible than before; when a larger dose was given the heart's action could no longer be felt. Reflex movements could not be excited. (The frogs had five to twenty milligrammes inserted into the subcutaneous cellular tissue.) Rabbits took from five to ten centigrammes, either by the mouth or by injection into the peritoneum. When it was inserted into the cellular tissue it caused death in twenty-eight minutes, preceded by clonic convulsion and extreme mydriasis. After death the venous system and both cavities of the heart were found distended with blood. When half the quantity was injected into the peritoneum scarcely any convulsion was observed; the pupils were dilated, and the animal passed into a state of coma vigil, in which the breathing was remarkably retarded.

In men, the pulse from the first gained in frequency and strength, while the breathing lost in frequency but became deeper and fuller. There was increase of subjective warmth, great feeling of comfort, the head felt agreeably light, the ideas flowed with facility, and fantastic images followed each other in rapid succession; this was soon succeeded by extreme drowsiness, in resisting which there was great oppression of the head and confusion of thought. If he had given way to it the prover felt he would have passed into an agreeable dream life, like that produced by *Cannabis*. The effect of the drug varies according to the intensity of the effort made to resist it. As soon as the interference with consciousness ceases, and the relation between the mind and the external world is re-established, all the other functions return to their normal state.

11. *New Sydenham Society's Publications*, vol. xix, p. 455. (From *L'Union*, No. 91, p. 235, August 2nd.)

The leaves have long enjoyed a reputation among the Peruvian miners for their power of sustaining the strength, and enabling the workman not only to endure prolonged abstinence, but to ascend heights without dyspnoea. In larger quantities the chewing of leaves induces a state of intoxication, like that of *Cannabis*.

12. *Medical Times and Gazette*, 1871, vol. ii, p. 407. By Dr. Scrivener.

Coca chewers have paleness of lips, slight yellow tinge about angles of mouth, teeth stained bright yellow. With its use the countenance becomes more animated, eyes brilliant, pulse strong and frequent, and desire for physical exertion. Abuse of *Coca* causes signs of premature old age, unsteady step, yellow skin, want of brilliancy of eye, and general indifference or apathy. It enables the Indians to travel long distances without fatigue and without needing food. It causes in them greater brilliancy of eyes, more agility in walking, and animation and content; they appear as if they had partaken of a rich repast.

SMILAX OFFICINALIS (SARSAPARILLA).

1. *Transactions of Royal Medico-Botanical Society*, 1829, vol. i, Part I, p. 61. Remarks by Dr. Hancock.

It has nauseating, drowsy, and racking effects. It affects the tongue and fauces with a nauseous acrimony. A negro took the infusion from four ounces of Rio Negro sarsaparilla. It caused nausea and great prostration of strength, a degree of torpor which induced him to lie upon the ground with unwillingness to move or get up. He said it made him "sick as death and broke all his bones." There was scarcely any alteration of pulse, unless it were a little retarded.

2. *Dublin Journal of Medical and Chemical Science*, 1835, vol. vi, p. 149.

Cox, in his *Narrative of a Residence on Columbia River*, says the *Sarsaparilla* which grows there causes salivation.

3. *Boston Medical and Surgical Journal*, 1834, vol. ix, p. 37.

Symptoms from *Smilax aspera* by Dr. Ashburner, *correctly* copied from the *London Medical Gazette*, 1853, vol. xii, pp. 350—3. A gnawing hungry sensation; an abundant diuresis; lightness or pain in head. Dr. Belinaye says that *the common Sarsaparilla* is very subject to lie heavy on the stomach, and to produce indigestion.

CUPRUM AND ITS SALTS.

[The collection of poisonings by *Arsenite of Copper* will be given under *Arsenic*.]

1. *Lancet*, 1830-1, vol. ii, p. 233.

Apparently translated from *Lancette Française*.

A man, æt. 46, was employed in working copper for six months. For three days he had been attacked with violent retchings and nausea, when he was admitted into the *Hôtel Dieu* on February 26th. His countenance was then rather wild, conjunctiva in-

jected; he complained of headache, restricted to the orbits; tongue white in middle, red at edges; abdomen tense, hot, and tender to touch; *bitter taste in his mouth*; violent intermittent colic; diarrhoea; tenesmus; skin hot and dry; pulse frequent and weak; he was also affected with slight cough and mucous expectoration.

Leeches to stomach, followed by an emollient cataplasm; opiate injection; low diet.

28th.—Some relief; colic, nausea, and diarrhoea less.

March 1st.—Worse; tongue brown and dry; skin hot and parched; abdomen excessively tender on pressure. Leeches to the anus; injection, &c., as before.

2nd.—Much better; tongue moist and white; abdomen soft, colic and pain better. Reported convalescent.

2. *Lancet*, 1831-2, vol. i, p. 294. By R. Cobbett, M.D.

A little girl, æt. 7 years, swallowed a copper coin on July 27th; it was afterwards pushed into the stomach. During the next six weeks there were slight headache, short cough, nausea, loss of appetite, tense abdomen, slow bowels, and yellow tinge of skin. Treatment removed these symptoms. The child was not seen again till October 24th, when she looked pallid, had pain in the left iliac region increased by pressure; and foul tongue. Purgatives removed the coin on October 26th.

3. *Lancet*, 1841-2, vol. ii, p. 145. By Dr. R. B. Todd.

January 24th.—A woman, æt. 18, was brought into the hospital having swallowed a solution of *Sulphate of Copper*. She had swallowed the poison on 18th; in five minutes she vomited; she then took salt and water, which promoted the vomiting considerably; her throat became very painful and felt burnt; and the abdomen became swollen, tender, and painful; she passed a good night. Next day she had constant pain in the region of the stomach, and vomited everything, solid and liquid; also some diarrhoea. The vomiting, diarrhoea, and abdominal pain continued till the day of her admission. On admission she was suffering chiefly from exhaustion; she had some pain in the abdomen, and unpleasant coppery taste in the mouth, nausea without vomiting, and diarrhoea; tongue white and furred; general exsanguined state of the surface; pulse 150. After

treatment, by 27th, she lost all pain except headache, and recovered her appetite.

Additional remarks by Dr. Todd.—*Sulphate of Copper* irritates, inflames, and kills the mucous membrane of the œsophagus and stomach with which it comes in contact; it also affects the nervous system, causing insensibility, convulsions, tetanic spasms, or palsy.

4. *Lancet*, 1842-3, vol. i, p. 668. By Dr. Degrange, of Bordeaux.

Imperfectly translated from *Gazette Med.*, November 26th (see below from *Journal de Médecine Pratique de Bordeaux* in *London Medical Gazette*).

5. *Lancet*, 1855, vol. i, p. 73. By Dr. Corrigan, from the *Dublin Hospital Gazette* for September. See original below.

6. *Lancet*, 1869, vol. ii, p. 426. By Dr. Alexander Boggs.

A lady was in the habit of using injections from a brass syringe which proved to be coated internally with *verdigris*. She suffered on one occasion from vomiting and purging, attended with severe griping and colicky pains in stomach and bowels, and a sense of constriction in the throat. The stools were copious, watery, and dark; urine scanty; thirst urgent; pulse small and irregular; surface cold and bathed in perspiration; great prostration of strength. She suffered more or less in the same way every time she used the instrument.

7. *Lancet*, 1869, vol. ii, p. 543.

Abstract of a paper, by Dr. Clapton, read before the *Clinical Society of London*.

Distinctly marked green stains on the teeth close to the gums; bluish-green perspiration; hair of a greenish hue in old workmen, and green discharge from old ulcers. Copper workmen are generally an unhealthy looking class, and subject to considerable muscular debility.

8. *Glasgow Medical Journal*, 1863-4, p. 251.

Extract from *American Medical Monthly*.

The continued exposure of the workmen to copper injuriously affects their health, and strongly predisposes them to tubercular phthisis.

Reference is also made to Dr. Perron's report to the *Medical Society of Besançon*.

9. *Association Medical Journal*, 1854, pp. 1061-2.

Dr. Corrigan's remarks quoted. See original below.

Case of poisoning by *verdigris* is given from *Journal de Chemie Médicale*, August, 1854.

The poison was given in soup. Both the father, mother, son, and grandmother tasted the soup, and complained of its intense bitterness. On giving some to the dog and cat, the latter quickly vomited, but the dog showed little uneasiness. Colic, pricking sensations in the throat, and desire to vomit, were complained of by all. Three drachms and ten grains of *verdigris* were found in the soup.

A case of poisoning by the *Sulphate* in the same journal (for October, 1854) is merely referred to.

10. *Edinburgh Medical and Surgical Journal*, 1830, vol. xxxiii, p. 220.

Copied from *Revue Médicale*, September, 1829. A very imperfect version (see below from *La Clinique* in *London Medical Gazette*).

11. *Edinburgh Medical and Surgical Journal*, 1844, vol. lxii, p. 261.

Case by Guillo, from *Journal des Connaissances Medico-Chirurgicales*, December, 1843.

A woman, æt. 28, swallowed a large dose of *verdigris*. Very shortly after she was seized with great anxiety, vomiting, acute pains and swelling of the abdomen, sensation of burning heat in the throat, coldness and severe cramp in the extremities, oppressed pulse, swelling of the face, and sparkling eyes. Had an emetic which brought away a quantity of pultaceous matter composed of half-digested food, but without traces of the poison. This was on October 20th. On 21st, at 2 a.m., the deglutition was very painful; there was hardness and swelling of the neck; the abdomen was tympanitic and painful on the least pressure; the countenance was heavy, the face flushed, and the pulse oppressed. About two pounds of a distinctly greenish fluid were evacuated,

mixed with a few streaks of blood. During the day deglutition became more and more difficult. The mucous membrane of the mouth became altered in appearance in several places, and the stiffness and swelling of the neck notably increased. The face and eyelids were swollen and red, and the eyes prominent; the abdomen became flattened, but extremely sensitive, and the rectum so painful that she could not bear an injection. On 22nd a tendency to coma was observed. The face was pale; the lips swollen; the gums ulcerated; and there was a copious discharge of viscid saliva. The neck had become softer, and many ecchymosed spots were observed on it. A copious stool was passed, the first since the poisoning, and *Acetate of Copper* was found in it. Some blood which was drawn presented the inflammatory coat. She had several spasmodic fits after taking a draught of infusion of marsh-mallows. On 23rd a quantity of viscid glairy matters were vomited. They were of a greenish colour, and tinged with blood. She suffered also occasionally from spasmodic attacks. On 24th epistaxis and general cramps came on, and the evacuations by stool and urine were completely suppressed. In afternoon the whole body became cold, and convulsions supervened, which lasted till the evening, but abated on the occurrence of free evacuations by stool and urine. On 25th she was somewhat better, and able to pronounce a few words. On 26th the ulcers of the mouth began to heal. On 27th she vomited some greenish glairy matters, but from this date gradually amended, though complaining occasionally of epigastric uneasiness.

12. *Lancet*, 1863, vol. ii, p. 129. By Dr. Harley.

C. S—, æt. 18, a copper-plate printer, was admitted on July 3rd, complaining of severe colic. He stated that while sitting reading on the previous evening he was suddenly attacked with acute pain in the abdomen; he felt "just as if some one had struck him violently in the belly." The pain, which he described as a "dead pain increasing every now and then," lasted fourteen hours. The pain is increased by pressure; bowels act once daily; he feels very sick. Has a peculiar sallow, almost clay-coloured, complexion, and an anxious expression. The lips are livid and the eyes sunken. Tongue tolerably clean, but round the gums there is the characteristic purple line of copper poisoning.

He has been a copper-plate printer for two years; in cleaning the plates he inhaled "a good deal of greenish dust-like verdigris." He had two similar attacks before this; the first, in October, lasted a fortnight, the other, a month ago, lasted three days. Ordered *Spirits of Nitric Ether*, dilute *Sulphuric Acid*, *Sulphate of Magnesia*, *Laudanum*, and *Camphor*.

July 7th.—Better. No more colic, only a little pain in stomach when bowels acted. Three stools a day since he began the medicine. Face less sallow and anxious-looking. Purple line well marked.

10th.—Looks still better. No pain. Line on gums less marked. Feels much better now, and has only a slight weakness in abdomen.

14th.—Feels perfectly well. Line on gums still distinct. Dismissed cured.

13. *Medical Transactions of the College of Physicians*, 1785, vol. iii, p. 80. By Dr. Thomas Percival.

Reference is first made to Dr. Falconer's observations on copper.

CASE 1.—August 25th, 1783, a lady, æt. 17, ate three or four ounces of pickled samphire which had become impregnated with copper. Being very thirsty soon after, she drank about the fifth part of a pint of vinegar. In the evening she complained of pain in her stomach, and perceived a rash upon her hands and breast. She went to bed early, felt indisposed, and slept little during the night. The rash almost entirely disappeared before noon on August 26th. She was troubled at times with shooting pains over the whole body, but particularly on the right side, and was dejected, restless, and very thirsty. On 27th the pain and thirst continued, she had a longing for acids, and was much troubled with flatulence. Her pulse was frequent and small; her tongue covered with a white fur, and she passed several days without a stool. During the operation of a laxative the pain removed from the right side to the left, and she felt a great and universal soreness. On 28th the symptoms continued without abatement. On 29th the pain in her side became extremely violent; in the evening, however, it was alleviated, and never afterwards returned with much severity. On 30th (morning) sickness came on; she vomited at intervals through the day, and a hiccup usually preceded her retchings. The vomit was not

offensive, consisting chiefly of the liquids she swallowed. The retchings were incessant on morning of 31st; a quantity of samphire was thrown up; all the discharges were of a green colour, very offensive, and tasted like copper to the patient. The hiccup was frequent, and always occasioned vomiting. The above history was given by her medical attendant. When Dr. Percival saw her the discharges by stool and vomiting were extremely offensive. The latter were of a dusky green colour, and acid to the patient's taste, though not perceptibly so to the nostrils of the bystanders. The stomach was enormously distended with wind, and exquisitely tender to the touch; the hiccuppings were almost incessant; the pulse was quick, tremulous, and irregular. After treatment the symptoms abated, but in twenty-four hours the vomiting recurred with great inquietude; the extremities became cold; the pulse weak and fluttering; the countenance ghastly; and she expired early on the morning of September 3rd. The body was opened the same day. There was about a quart of brown foetid liquor in the stomach. Internal coat of stomach was inflamed and gangrenous, particularly about the cardia and pylorus; and this appearance extended itself some way down the duodenum.

CASE 2.—A healthy and robust young man drank some water out of an old tea-kettle, the inside of which was covered with verdigris. He had immoderate thirst, violent pain, distortion of the stomach, and severe retchings.

CASE 3.—A boy who swallowed a halfpenny was so sick the next day that he could retain nothing upon his stomach. He vomited a large quantity of a greenish-coloured fluid which had the smell of verdigris.

CASE 4.—A young woman swallowed about two drachms of *Sulphate of Copper*. It occasioned the most dreadful convulsions; in the intervals of her fits she was perfectly rational.

14. *Medical Times*, 1844, vol. x, p. 495. By Dr. Armstrong.

Five persons partook of a pudding containing verdigris. Two women became sick in fifteen minutes. The most prominent symptoms were severe headache, succeeded by vomiting and purging. After these had in a measure subsided tympanitis supervened, which in one case was very distressing, her abdomen becoming tense as a drum, which, however, was not very long

in subsiding. Associated with the above was the copper-like taste in the mouth, followed by severe numbness of legs and arms, accompanied with great trembling, especially of the hands, which incapacitated them from holding anything with safety. A girl about ten years old was not attacked till next day, when similar symptoms came on, but less severe. Another little girl was very severely affected with all the symptoms, especially vomiting and purging. The nurse, an old person, was not affected till the third day, when symptoms similar, but less severe, came on. Her convalescence was slower than the others.

15. *Medical Times*, 1847, vol. xv, p. 284.

A case treated at *Hôtel Dieu*. Translated.

A woman, æt. 36, took a scruple and a half of *Sulphate of Copper* in water. The poison was not completely dissolved, and one portion penetrated into the nose, while another obstructed the mouth and fauces. The patient was immediately seized with pains in the throat, stomach, and nose, and sickness soon followed. In fifteen minutes, twelve eggs, some milk and linseed waters were given. The uvula was touched with a feather, and abundant vomiting took place, accompanied with copious abdominal evacuations. In the course of the day she was brought to the hospital. In spite of antiphlogistic treatment the pulse remained quick and small, the skin cold, frequent subsultus tendinum was noticed, and the vomiting was incessant; since twelve hours no urine had been secreted. A stimulant mixture was given, and in a very short time considerable improvement was observed; the vomiting and pains ceased, and the urine returned. The sense of burning in the stomach disappeared. In four days she was dismissed.

16. *Medical Times*, 1847, vol. xvi, p. 512.

Dr. T. W. Foster, of Keene, Jessamin county, Kentucky, was called to see a child, aged fourteen months, who had swallowed some percussion caps. When visited patient seemed to be sinking fast. The eyes were hollow and glazed; great heat in the epigastric region, and coldness of the extremities; there had been eight or nine discharges from the bowels in an hour. There had been free vomiting produced by some domestic medicine, and the vomiting was promoted by giving *Ipecac.* and large quantities of

warm water,¹ which the patient eagerly drank. The discharges became debilitating, when *Laudanum*, &c., was given. Child recovered.

17. *Medical and Philosophical Commentaries* (Edinburgh and London), 1776, vol. iv, p. 73. By Dr. Samuel F. Simmons.

A man who had received a slight cut on the back of his hand had it slightly touched with *Sulphate of Copper*, to remove a little fungus which appeared in the wound. Next day his hand was much swelled, though not very painful. The application was repeated, and the swelling soon increased. A lymphatic vessel was felt painful and inflamed a great way up the arm, and the patient complained of pain in the axilla. The *Sulphate* was now discontinued, and the swelling soon subsided. I have since observed another case very much like the present.

18. *Medical Times and Gazette*. New Series, 1854, vol. ix, p. 277.

Dr. Corrigan's cases referred to. See original below.

19. *Medical Times and Gazette*, 1859, vol. xix, p. 265. By Dr. Thomas Edward Amyot.

A lady drank water from a copper kettle. Analysis proved the presence of copper in the water.

December 20th.—Patient suffered from slight sore throat, total loss of appetite, restlessness, great thirst and other feverish symptoms, sickness, and considerable enlargement with induration of the right cervical glands. Had observed the swellings for some days. Treatment seemed useless, and the symptoms increased; she took to her bed; vomited every kind of food about twenty minutes after taking it; suffered greatly with tenesmus, with scanty dark pulpy motions; the urine scanty; the skin was clammy, pale, and doughy looking. The pulse quick and thready; abdomen slightly tender over its whole surface; mouth sore with little blisters on the mucous membrane; face swelled and pasty, the expression anxious, and the state of exhaustion extreme. The cause of the mischief (the poisoned water) being removed, she vomited but once after; the tenesmus ceased; the swelling of the glands which had levelled the neck with the jaw slowly subsided, as did the soreness of the mouth

and the other symptoms, and by the beginning of February her recovery was complete, though she remained weak until the middle of March. During her recovery the stomach remained sensitive and impatient of any but the most bland and simple milk diet, and the effects of some articles of food were curious; acids of any sort, fruit, &c., gave the tingling sensation of a galvanic current to the mouth and teeth.

20. *Medical Commentaries*, by Dr. Andrew Duncan, 1783, vol. vii, pp. 349—60.

Reported by Dr. John Heysham.

A woman suffering from epilepsy took *Cuprum ammoniacum*, half a grain for a dose, at first two pills a day, then increasing the number. She began the medicine on January 9th. June 3rd she was seized with a violent looseness, which lasted ten days and then ceased. June 18th.—About a quarter of an hour after each dose she becomes giddy, lightheaded, and in every respect seems in a state of intoxication: these symptoms continue about an hour, when she is affected with nausea and sickness at stomach, but never vomits; afterwards she breaks out into a sweat in which she continues nearly an hour, and then becomes perfectly well. September 7th.—For some days great pain in head.

A man suffering from epilepsy took *Cuprum ammoniacum*. It caused a little degree of nausea, but no vomiting.

21. *Medical Times and Gazette*, 1861, vol. ii, p. 488.

Abstract of a paper by Dr. Perron, of Besançon.

The watch manufacturers who continually handle gold and copper suffer much from tubercular consumption. The symptoms the men suffer from are,—paroxysms of fear, pulse frequent, skin hot, throat dry; most of them complain of pain in the epigastrium, in the region of the kidneys, and in the head; many suffer from indigestion, enteritis, diarrhœa; and others have a feeling of constriction and an acute pain in the throat. The teeth are in nearly all such cases coloured more or less green, and almost bronzed. These symptoms are especially striking in the apprentices, who are almost exclusively occupied in filing copper. In many cases the symptoms take a very severe form: acute colics, fever, burning thirst, vomiting, diarrhœa, or obstinate costiveness, which lasts from twenty-four to thirty-six

hours, are observed. The nutrition is also mostly impaired, the muscles are badly developed, the complexion haggard, the look miserable. The continual absorption of small doses of copper, and its local and direct action, the frequent repetition of toxic and febrile symptoms, and the cachexia at last produced by it, are the causes of the prevalence of consumption among these men.

22. *Dublin Hospital Gazette* (in my "Index" erroneously printed "*Reports*"), 1854, vol. i, p. 229—32. By Dr. Corrigan.

In all the cases of copper-poisoning which have come under my notice, there was an edging of rich purple on the margins of the gums of the incisor, canine, and bicuspid teeth of both jaws; sometimes the colour is a reddish-purple. All the cases I have seen have been from the *Carbonate*.

Cases reported by Mr. Sargint.

CASE 1.—A brazier, and exposed to the handling of *verdigris*. July 16th.—Complains of cough, profuse night sweats, occasional griping pains in abdomen, great loss of strength and flesh. He had been in perfect health till seven months ago, when the cough and griping began, which had gone on increasing. He never had hæmoptysis, and there were no physical signs of the chest to account for the symptoms. The gums were retracted from the teeth, and had a band of ulceration one eighth of an inch broad, of a light purple colour. By July 28th he was dismissed nearly well.

CASE 2.—A brass founder. January, 1853, was admitted with simple fever from which he soon recovered. His convalescence was slow, and he complained of constant griping pains in the abdomen. His peculiar cachectic appearance in his convalescence attracted attention. His gums were in the same condition as those of the above case. He was dismissed February 8th, 1853.

CASE 3.—An engine-driver; had to clean and file copper and brass. January 30th was admitted, complaining of great loss of strength, pains in the joints of his upper extremities, irritability of the stomach especially after meals, and griping pains in the bowels. He has a most unhealthy-looking countenance, and his complexion is of a leaden hue. He has a hard dry cough and night sweats. Both sides of chest are healthy, with the excep-

tion of the left side posteriorly inferiorly, where there is a fine *muco-crepitus*. The gums, both upper and lower, are ulcerated at their attachment to the teeth, the ulceration having a purple margin, and extending on each side to the first molar. Tongue furred; pulse 90; appetite bad; bowels difficult to move. He never experienced any ill effect from his works except occasional colicky pains, which were at times very severe, till six months ago, when he got a severe wetting. Soon after, he felt his strength gradually failing. Three weeks after, he began to feel pains in his bones; soon after he was affected with cough, and from that time he lost flesh. Constant feeling of chilliness over him. March 12th.—Much better.

CASE 4.—An engineer, whose hands were constantly immersed in a compound of oil and brass or copper filings. He had loss of appetite, cough, night sweats, constipation, colicky pains. Slightly emaciated. Lungs healthy. Gums retracted from the teeth, ulcerated, with a purple margin.

CASE 5.—A shoemaker who uses brass pegs, which he constantly files and puts in his mouth. Admitted February 7th with cough accompanied by viscid expectorations, occasionally tinged with blood. Aspect rather unhealthy and pale; not emaciated. Gums ulcerated, margin purple. Subclavicular region comparatively dull on percussion; in this region *muco-crepitus* is audible; expectoration slightly purulent. Has been gradually losing strength for last seven months, during which period he has had several attacks of hæmoptysis; within the last four months has been attacked with pains in his shoulders and abdomen.

Cases reported by Mr. Currin.

CASE 1.—A brazier, constantly handling old and new copper. Admitted July 24th. His appearance is unhealthy, his complexion dark and sallow. He is emaciated. The anterior gums present a peculiar purple-coloured margin, the teeth are dark-coloured, and the gums are retracted. He has an habitual cough, generally dry; his flesh wastes away; his muscular strength is greatly diminished; frequent pains shooting across abdomen and under the ensiform cartilages. Eighteen months ago he began to cough, to feel pains at first trifling shoot through his body, and gradually he arrived at his present state. August 12th.—Discharged nearly well.

CASE 2.—A man who bought copper, iron, and tin, and used to rub the dust and rust off them with his hands. His appearance was remarkably cachectic, his abdomen large, he was reduced in strength, had lost appetite, and complained much of obscure and colicky pains shooting through abdomen. Gums were retracted with the peculiar purple edge I have already described.

Dr. Corrigan's conclusions.

1st. Copper or its carbonate will act as a slow poison by absorption, undermining the constitution, producing emaciation, catarrh, and loss of strength, and leaving the system in a state little capable of resisting the ordinary exciting causes of many diseases.

2nd. The symptoms, though not acute, are well marked; emaciation, a cachectic appearance, loss of muscular strength, colicky pains, cough without physical signs to account for it, and the peculiar characteristic sign of retraction of the gums, with a purple, not a blue, edge.

23. *Guy's Hospital Reports*, 1866, 3rd series, vol. xii, pp. 329—57.

Report by Dr. Taylor of twelve cases of poisoning by food cooked with salt and water in an old copper vessel (therefore a *Chloride of Copper* was probably formed). One case proved fatal, but the symptoms and post-mortem appearances in this case are doubtful, as he was ninety years of age and had previously suffered from disease.

CASE 1.—Mark S—, æt. 90. On July 7th suffered from sickness, purging, and severe pains in abdomen. He died on July 25th. On July 6th he came down stairs at 6 a.m., but felt poorly. He took some tea; he then began to be purged, and the purging increased during the day and was violent about 10 p.m., when he was put to bed. He was in great pain while the purging lasted, which was upwards of a week. He first began to vomit on the morning of July 7th, but was not sick long. He seemed easier after the sickness; and after the purging had ceased he suffered from pains in his inside till his death. He constantly complained of a pain in his right side, and was insensible at times three or four days before he died. About 5 p.m., July 25th, he took a little tea, and was immediately very sick

and taken with shivering. He vomited mucus twice. He was sensible, and kept asking for more clothes to be put on him. He was then getting very cold. He died that night at 7.45 p.m., having kept his bed from the time he was first taken ill.

Post-mortem.—General aspect healthy, but body emaciated. Heart healthy; lungs adherent to ribs. There was disease of right lung, which was somewhat solidified and shrunk. Liver healthy and gall-bladder full. Stomach contained about half a pint of grumous fluid; the mucous coat was generally pale and healthy. There was a small patch of a dark congested appearance near the pylorus, but no ulcers. Duodenum presented a red inflammatory appearance throughout its whole length, waning off towards the jejunum, which was healthy. One large ulcerated patch in middle of duodenum. Upper part of ileum healthy, but about fourteen inches from ileo-cæcal valve the mucous membrane was much inflamed, and was thickly marked by ulcers of various sizes, some with ragged edges, and extending quite through the mucous coats. There was a space of about six inches in this region which was marked by effused blood. Colon contained a small quantity of fæcal matter, with one or two ulcerated patches similar to those in the ileum. All these morbid appearances were of recent date. Patient had had pneumonia the previous January. During his last illness there was great exhaustion with the diarrhœa, and pain in bowels.

CASE 2.—Marian D—. About 1 a.m. July 5th (about twelve hours after the meal) felt very unwell; feet very cold and shivered; head very bad. Did not feel sick then, but about 4 a.m. felt very sick. Rose about 6 a.m., attempted to do her work, but was very sick and had diarrhœa. Was more or less ill till July 8th.

CASE 3.—Susan B—. About 2 a.m., July 5th (about twelve hours after the meal), felt ill, very sick, and cold in the legs, feet, and hands. Rose about 7 a.m., and then had vomiting and diarrhœa. The sickness lasted till July 6th, and the purging longer. Was under treatment till July 10th.

CASE 4.—F. A— (a nurse), took the food on July 4th. About midnight she felt unwell, and about 1 a.m. was very sick and had diarrhœa. Her hands became dead (numbed) and her nails white, and she had a burning sensation in her throat. Was ill for a week.

CASE 5.—A child, æt. 2 years, was taken sick the day following (July 5th); seemed unwell and drowsy at noon, and was put to bed and there continued till about 4 p.m., when she became very sick. She refused to take her breakfast on the following morning.

CASE 6.—J. S— (butler) was taken ill between 3 and 4 p.m. July 5th (from twenty-five to twenty-six hours after the meal); had great pain in head, shivering in body, was sick in evening, and had diarrhœa about 7 p.m. Sickness and purging continued two or three days, and on the first and second nights he was very ill.

CASE 7.—C. S— (a page) did not feel ill till the morning of July 5th (forty-two hours after the meal). He had headache, was cold, had diarrhœa, but no sickness.

Mr. Covey, the surgeon in attendance, adds the following symptoms:—All had been violently sick. The nurse (F. A—) was restless, felt sick, had pain in region of stomach and coldness. Two of her employer's sons had much the same symptoms; they were relieved by vomiting and purging. Susan B— was similarly affected. At 2 p.m. he again saw A—; she was almost pulseless, and could retain nothing on her stomach. The two sons were very ill, the sickness having returned. They were all worse than in the morning. At 8 p.m. they were generally worse; everything they took was rejected. On 8th A— was much worse; her case was very serious for nine or ten days. The little girl was also very ill. Martha T— complained (10 or 11 a.m., July 6th) of headache and severe thirst with derangement of stomach. Had not been able to take much nourishment.

CASES 8 and 9.—Two children had the food about 11 a.m. July 5th; next night they were both taken ill with purging and vomiting.

CASE 10.—Martha T—. About 1 p.m. of July 5th had headache and sickness, and cramps in stomach. She was ill for three days.

Cases from Orfila are reported. See his *Toxicologie*, 5th edition, vol. i, p. 784.

Reference made to Taylor's work on *Poisons*, p. 463.

Dr. Moore's cases are *imperfectly* quoted from the *London Medical Gazette*. (See original; below).

Reference made to Orfila's *Toxicologie*, vol. i, p. 787.

24. *Medical and Physical Journal*, 1801, vol. v, p. 438 (May).
By Dr. Kinglake.

An epileptic man took *Ouprum vitriolatum* three times a day for three weeks in doses of from one to five grains. It caused occasional nausea, and an herpetic determination on the cuticular surface.

25. *Medical and Physical Journal*, 1829, vol. lxii (vol vii of New Series), pp. 132—3.

A case of poisoning translated from *La Clinique*. See below.

26. *London Medical Gazette*, November 17th, 1832, vol. xi, p. 211. By John Prichard.

Miss —, æt. 14, used to drink milk prepared in a copper vessel. She had for some months showed much general debility, and in last September had an attack of rheumatic fever, which yielded to remedies slowly and unsatisfactorily. After some days, during which the perspiration was considerable, I noticed a collection of light green perspiration between the toes and underneath the nails of the feet, and to a less extent in the upper, but more especially the under, surface of the foot. Copper was found in it. A day or two before her mother's tongue was swollen and pale. The culinary vessels in common use were of copper, and had lost the tin coating from half their surfaces.

Reference is made to Sauvage and to Borelli.

27. *London Medical Gazette*, December 15th, 1832, vol. xi, p. 353.

Review of a paper by M. Postel, D.M.P., in *Journal de Pharmacie et des Sciences Accessoires*, &c., October, 1832. It is entitled *Considération sur l'emploi du sucre dans les empoisonnements par les matières cuivreuses*.

References are given to experiments by Marcellin, Duval, and to Orfila, in the first edition of *Toxicologie*, and in articles contributed to the *Dictionnaire des Sciences Médicales*.

28. *London Medical Gazette*, August 6th, 1836, vol. xviii, p. 742. Reported by Mr. G.

A child sixteen months old put *Sulphate of Copper* in her mouth. She became very sick and vomited in about fifteen

minutes. This was about 2 p.m., and the child died about 6 p.m. All the liquid vomited was of a bluish-green colour, and there were pieces of the *Sulphate* in it. The child was alternately hot and cold, and became insensible for some time before death, but it did not appear to have been convulsed beyond the straining of the vomiting, which was severe; the bowels were not opened during the illness.

29. *Medical Times and Gazette*, 1868, vol. i, p. 658. By Dr. Edward Clapton.

This case is given here *very imperfectly*. For the complete account see below.

CASE 2.—A patient came under my care with a dark green line on the edge of the gums, and a similar stain along at least half of each tooth. He was a coppersmith. His general symptoms, which were of a chronic character, were vertigo, gastrodynia, flatulence, dyspnoea, frequent vomiting, some degree of wasting of the body, and a peculiar coppery taste. Tongue moist and flabby, pulse hard and full. The workmen in the factory (fifteen in number besides himself) say they have rarely suffered from any definite illness, but all complained of lassitude and giddiness, and a disinclination when not at work to take exercise or to go about. Some of them were exceedingly thin and pallid. All of them had a green stain on their teeth of different shades of colour, varying from a light bright green to a dark greenish-brown. Their perspiration had a bluish-green tinge.

30. *Medical Times and Gazette*, 1870, vol. i, p. 581. By Dr. Cameron.

CASE 1.—A man, æt. 33, employed at copper smelting works, was admitted, September 7th, with circumscribed pain in epigastric region, frequent vomiting, especially after food, occasional hæmatemesis, loss of appetite, soreness of the gums, which had a slight blue line apparent, and looseness of the teeth. Has been ill for six months; this was the second attack within fifteen months. Has got much thinner; looks haggard, and feels very depressed. Ordered *Bismuth* and *Chloric æther*, &c.

September 28th.—Appetite improving; less pain over abdomen, but stomach still very irritable; vomits once or so every day, the vomit being very bitter. Add *Prussic acid* to mixture.

October 10th.—Abdominal pain gone, only slightly felt on pressure; vomits only every two or three days, substances being retained longer, but when ejected are still tinged with blood; teeth less loose; gums look healthy. Was discharged convalescent in a fortnight.

CASE 2.—A man, æt. 38, employed in copper smelting works, was admitted, March 15th, with symptoms of irritable dyspepsia. Has been unwell for a month, first complaining of nausea, then vomiting frequently during the day, unable to retain anything on his stomach; pain in epigastric region circumscribed; the substances vomited were green and viscid; no purging; thirsty; total loss of appetite; loss of flesh; the pain in abdomen increases on pressure. After treatment was discharged convalescent on March 21st.

CASE 3.—A man, æt. 34, employed at copper works, was admitted March 22nd. Has been unwell for a year, much worse the last three months. He first began to lose his appetite; had a constant nasty taste in mouth; a feeling of langour, nausea, headache, and vertigo. These symptoms increased, and for the last three months has had much pain in epigastric region, headache, and vertigo; total loss of appetite; constant feeling of nausea; vomiting immediately after swallowing, and also during the intervals of food taking, vomit being green, acid, and viscid; great depression; has a sulphurous taste in his mouth; gums spongy and teeth loose; no diarrhœa; tongue moist, but furred; pulse 100, and weak. The pain over stomach is increased by pressure.

March 31st.—Was dismissed cured.

31. *Medical Adviser and Guide to Health*, 1825, vol. ii, p. 377.

Reference to Percival's case. See original above.

32. *London Medical Journal*, 1782, vol. ii, p. 65.

Reference to *An Essay on Oculinary Poisons*; published by Kearsley, London, 1781, pp. 45.

The notices of copper are taken from Mead's *Essay on Poisons*, and M. Amy's *Treatise on Cisterns*.

I have examined Dr. Richard Mead's *Mechanical Account of Poisons*, 3rd edition, 1745, but find no reference to copper therein.

33. *London Medical Journal*, 1782, vol. ii, p. 411.

Copied from *Journal de Med.*

On Monday, July 9th, 1781, Dr. Morizot des Landes was called to see the Jacobin monks who had eaten fish dressed in a copper vessel with vinegar. They were twenty-one in number, and complained of violent headache, pain of the bowels, diarrhoea, excessive weakness of the whole body, particularly of the legs, and a constant pain at the fore parts of the thighs. All had more or less fever, and some had cramp in the calves. Those who were first attacked had acute pain at stomach, and anxiety about the præcordia. The food which had poisoned them had been eaten on the Friday and Saturday previous; some were affected on Friday, the rest not till Saturday. After treatment they all recovered in five or six days, but a visitor who dined with them on Saturday continued in a very ill state of health till September.

34. *London Medical Journal*, 1787, vol. viii, p. 201.

Notice of *Experiments and Observations on the Danger of Copper, &c.*, by William Blizard, London, 1786. I have examined the *original* work, but there are no symptoms given in it.

35. *Medical Facts and Observations*, 1792, vol. ii, p. 205.

Notice of *Caution to Heads of Families* in three essays—3rd on the poison of Copper. By A. Fothergill, M.D., 1791. See original below.

36. *London Medical Gazette*, 1829, vol. iv, p. 155.

Translated from *La Clinique*.

A man, æt. 26, placed some copper coins in vinegar, and allowed them to remain there a week. He drank the vinegar about 4 p.m.

October 25th.—At 7 p.m. he was found stretched without sense on the floor, and was immediately brought to the Hôtel Dieu. On his admission all the muscles were agitated with violent convulsions, the limbs remaining rigid in the intervals. There was much difficulty in supporting the patient. The teeth were firmly closed; the breathing short; pulse hard, small, and very slow. Stomach tender on pressure, which produced violent convulsions. Warm water forced down the throat, and tickling pharynx and

uvula with a feather, had no effect. He drank in the interval between the convulsions, and in a quarter of an hour he came to his recollection in some degree, and explained the cause of his poisoning. White of eggs in water was given; the convulsions ceased at once, but the hiccup continued during part of the night.

26th.—In morning, pulse was large, slow, intermitting; belly contracted, hard, and very sensitive all over to the slightest pressure; slight convulsions in the limbs; general lowness; taciturnity and paleness; pupils dilated; tongue soft, moist, and pale. In evening worse; extreme agitation, with colics, dyspnœa, hiccup, and a hard and contracted pulse. Urine scanty and scalding. A hard stool after the 3rd clyster. The night was passed badly.

27th.—Much better; pulse soft; no abdominal pain; urine free and a liquid stool had passed (he had had clysters administered). In ten days the digestive functions were re-established, and all the bad symptoms had disappeared. His moral condition had not improved; he still continued taciturn, motionless, with a pale countenance and a dry hot skin, and slept but little. He left the hospital November 8th.

References given to experiments by Chanserel, Marcellin Duval, Orfila, and Vogel.

37. *London Medical Gazette*, 1845. New Series, vol. i, p. 745. By M. Blandet from *Gazette Médicale*, 1845.

Copper produces in the workers in it a form of *enteritis* of which the chief symptom is a colic, with remissions. The workman bends himself double to relieve it; the belly is tender on pressure; there is headache and inclination to vomit; diarrhœa or constipation; the vomit consists of bilious fluid; the first stools are often green; fever is frequent; there is often lassitude. The workers who are careless of their persons have their hair coloured green; the perspiration is green, and their teeth are coated with a crust of sulphide of copper.

38. *London and Edinburgh Monthly Journal of Medical Science*, 1842, vol. ii, p. 935.

Case quoted from the *Chemist*, vol. iii, p. 253. See below.

39. *London and Edinburgh Monthly Journal of Medical Science*, 1848, vol. iii, p. 80.

Dr. Degrange's case quoted. See below.

40. *London and Edinburgh Monthly Journal of Medical Science*, 1854, vol. xix (vol. x of 3rd series), p. 175.

A woman ate beans poisoned with copper (probably verdigris). She felt a painful sensation in the throat, and had sore throat for several days afterwards. (From *Annales d'Hygiène et de Médecine légale*, Jan., 1854.)

41. *London Medical Gazette*, 1844-5. New Series, vol. i, p. 885. By Percy Dickens.

A boy, æt. 10, swallowed a halfpenny on January 16th, 1845. He went to school as before, occasionally complaining of a sense of weight and uneasiness in the epigastric region, and rather towards the right side, and sense of distension after meals, which generally subsided in three or four hours. He continued in much the same state till the night of February 12th, when after being in bed a short time he was suddenly seized with sickness, and instantly vomited a large quantity (more than a quart) of fluid arterial blood. The hæmorrhage continued at intervals through the night, but was checked by large doses of *Tartrate of Antimony* which considerably depressed the action of the heart. Next day (13th) the bleeding again occurred to a considerable extent, and after throwing up a considerable quantity of dark fluid, he became sensible (as he described it at the time) of something passing in the stomach, and thence into the bowels. A temporary relief was obtained, but the hæmorrhage again recurred, and he suddenly sank on the evening of the 14th in a state of complete collapse.

Post-mortem in thirty-six hours.—Body presented externally a complete state of paleness from draining of blood. There was a circular ulceration of the mucous coat of the stomach, corresponding exactly to the size of the halfpenny, but at a considerable distance from the pyloric orifice. The surrounding coats of stomach did not exhibit any unusual vascular appearance, nor were any traces of inflammatory action observable in any other parts of the organs. The coin had evidently escaped

through the pylorus. The coin was discovered at the termination of the colon.

42. *London Medical Gazette*, 1849. New Series, vol. ix, p. 487. By Dr. Moore, of India.

Cases of poisoning by food kept on copper plates, which were found to be coated with the sulphates and chlorides of copper.

General effects.—In the evening or following morning, as the case may be, a few hours after having eaten the food, those who suffered from its effects were carried to the cabin door complaining of violent pains and cramps in stomach and bowels. With these cramps there was a constant vomiting of greenish and yellowish-green bile. After the discharge of the contents of the stomach, and these small quantities of bile, dry retching commenced. With ineffectual attempts at vomiting, they suffered from a distressing feeling of constriction in the course of the œsophagus and across the chest in the direction of the diaphragm. The calls to evacuate the bowels were frequent. Every half hour or even less, sometimes in the course of twenty minutes, they were forced to go to the ship's chains; but seldom in the effort to relieve the bowels was feculent matter discharged. Blood in small quantities, and slimy mucous stools tinged with blood, were passed from the rectum. Shreds of lymph and frothy ash-coloured secretions were forced from the bowels by dint of straining. Without affording relief in a single case, these discharges from the bowels aggravated the sufferings of the patients. In the loins and the sacrum, at the navel and the iliac region, acute lancinating pains have been complained of in each case. With these pains tenesmus and burning sensation felt within the rectum, and close to the sphincter ani, were present in all, and were said to be severe. Pressure made by the palm of the hand over the different parts of the abdomen, in the epigastric region and over the transit of the arch of the colon, in general caused a pungent pain. The symptoms of acute fever set in immediately after the vomiting and griping pains in the stomach. The patients suffered from headache, urgent thirst, loss of appetite, prostration of strength. Pulse varied from 120 to 140, small and wiry. Heat of skin was pungent. Tongue furred and clammy. Foul nauseous bitter taste in mouth. Conjunctivæ of eyes bloodshot.

In three cases the attack was more acute. The features became distorted. His whole frame seemed to writhe under the pain. Pulse quick and at the same time so small, and weak and thready as scarcely to be felt. Skin became cold; extremities benumbed; urine suppressed altogether or retained in the bladder; when drawn off by the catheter it was high coloured and tinged with blood. One of these cases soon died. The second lingered a few weeks and died ultimately of chronic ulceration of the mucous membrane of bowels. The third recovered in part, but suffered from extreme debility of constitution afterwards. In ten cases the patient was convalescent on eighth or tenth day. In four cases it was more protracted. A subacute form of inflammation of the mucous membrane, attended by mucous stools eight or ten in twenty-four hours, kept the patient's constitution in a state of low irritative feverish excitement. In the neighbourhood of the cæcum, caput coli, and in the direction of the arch of the colon, pressure with the hand caused pain and tenderness. In two cases the disease ultimately assumed all the features of chronic ulceration of the large intestines.

Another fatal case, June 28th.—One of the stoutest coolies on board was seized with violent cramps in stomach, cramps in limbs, frequent vomiting, and purging of slime and blood. He was writhing in pain. In the course of the day he had been observed to be slightly ill, and had complained of gnawing pains in stomach. His sufferings from pains in stomach, bowels, and lower half of rectum were severe. Features distorted; pulse small, quick, and wiry. Urgent thirst, increased rather than slaked by drinking water; dry and parched feeling at roof and back of mouth. Constriction of throat and tightness across chest in the direction of the diaphragm were prominent symptoms. The cause was found to be the same as in the preceding cases.

Post-mortem.—Extensive and deep-seated inflammation of mucous membrane and subjacent tissues of the internal surface of stomach. This condition extended from the cardiac orifice to the pylorus, and for one inch and a half in the internal surface of œsophagus close to its termination in the stomach. The shades of red varied in different parts from a bright vermilion or bright scarlet to a deep red or violet colour. The patches of dark red, approaching to a brownish tinge, were small, circular, circum-

scribed, and situated in general beneath the mucous membrane of the posterior wall of the stomach. The mucous membrane corresponding to these patches was soft, tumid, pulpy, but not exco-riated. The surface of the membrane was free from the appearance of having sloughed. At the pylorus the membrane was intensely inflamed and glistening; tumid from a quantity of serous fluid exuded beneath the submucous cellular tissue.

In the duodenum the appearances were those of intense redness, a state of excessive injection, and congestion of the tissues by a sero-sanguineous fluid. This infiltration did not extend beyond the transverse portions of the intestines. In the mucous membrane of the small intestines circumscribed patches of redness were found scattered irregularly over its surface. The mucous membrane of the large intestines presented a few of these circumscribed patches of vascularity. In the rectum the inflammatory action had commenced, but was limited in extent. Within the peritoneal sac somewhat more than eight ounces of saffron-coloured fluid were found. The peritoneal coat of the jejunum and ileum was numerously studded with minute circular dots or specks of a bright red colour. On the upper surface of the arch of the colon, and on its ascending and descending divisions, these crimson-red circular spots were numerous. Between the peritoneal and muscular coats of the stomach an irregularly shaped patch of effused blood was noticed. On the lateral and inferior surfaces of this same viscus vascularity of the peritoneal coat, with sub-peritoneal exudation of blood and lymph, was traced to a short distance. The folds of the peritoneum were not agglutinated together by lymph; lymph was not found in the peritoneal sac.

43. *Practical Dissertation on the Medicinal Effects of the Bath Waters.* By Dr. William Falconer, Bath, 1790, p. 93.

In the Medical Museum there is an account of a person who lost the use of his hands by cleaning brass wire (for which see below) and in the narrative of the cases at the Bath Hospital before referred to is an account of one very similar, wherein the weakness of the hands was produced by the pointing of pins. This patient was, after a stay of 149 days, discharged nearly cured. See below.

N.B.—This work contains some pathogenetic effects of Bath waters, which seem deserving of a proving.

44. *Cautions to the Heads of Families.* By Dr. Fothergill, Bath, 1790, p. 65—95.

Several members of a family who drank from a spring impregnated with copper were at different times attacked with severe epileptic fits.

Copper causes enormous vomitings, profuse discharges of bile both upwards and downwards, inflammations and erosions of stomach and bowels, delirium, convulsions, syncope, death.

Case of Mr. Butler as recorded by Dr. Mounsey in *Philosoph. Trans.*, vol. 1, p. 19; vol. liv, p. 15, is referred to. See original below.

Extract from *Newman's Chemical Works*, v. i, p. 98 :—" I have known vehement vomitings and convulsions in children from the *Unguentum Ægyptiacum* (whose basis is verdigris) injudiciously applied to ulcers in the mouth."

Dr. Percival's case referred to. See above.

Travis' remarks quoted from *London Medical Enquiries*, vol. ii, p. 13. See below.

Ramsey's cases referred to. See below.

Quotation from a tract called *Serious Reflections on the Dangers attending the Use of Copper Vessels*, London, 1755 :—" The' great frequency of palsies, apoplexies, madness, and all the frightful train of nervous diseases which suddenly attack us without our being able to account for the cause, or which gradually weaken our faculties, are the poisonous effects of this pernicious metal taken into the body insensibly with our victuals, and thereby intermixed with the animal juices."

45. *St. George's Hospital Reports*, 1869, vol. iv, pp. 219—20. By Dr. James Nicholls.

A child, æt. 5, swallowed a copper halfpenny. It had struggled violently, and there had been repeated but useless efforts at vomiting, and it complained of being choked. The coin was pushed down into the stomach, and the child taken home. On third day child had all the symptoms of most acute enteritis. In spite of treatment the child got worse, quantities of bright blood were passed and there was blood in the matter

vomited ; the child died on the twelfth day after much suffering.

Post-mortem.—Lower third of œsophagus showed signs of acute inflammation ; the mucous membrane was of a bright red colour, soft, easily detached, and in some places ulcerated. The upper part of this tube, together with the pharynx, were healthy ; the stomach was inflamed but not highly so, except at and towards the pylorus, where the appearances were much the same as those in the lower part of the œsophagus. The whole track of the small intestines from the pylorus to the ileo-cæcal valve was more or less in a state of active inflammation, with here and there patches of ulceration of the mucous membrane, which was everywhere soft and pulpy. The large intestine was collapsed and contained only a small quantity of mucus mixed with blood.

46. *American Journal of the Medical Sciences*, 1828, vol. ii, p. 468.

Translated from *Journal Générale de Médecine*, November, 1827.

Sixteen persons drank the milk of a goat which had drunk some sour broth out of a copper vessel. They soon afterwards suffered acute pains in the stomach, with nausea, and general distress and uneasiness. In some the epigastric pains were very intense, they vomited porraceous and bloody matter ; these symptoms were soon followed by violent headache, lassitude, pains and cramp in the extremities, with all the symptoms of cholera morbus. The goat drank the broth on July 12th. On 14th it refused to eat, tottered in its gait, and a thick and viscid saliva flowed from its mouth ; the abdomen became tumid and painful ; the pulse small. These symptoms increased, and it died on 16th. On opening the body the intestines appeared to have undergone violent inflammation.

47. *American Journal of the Medical Sciences*, 1830, vol. xvi, pp. 259—60.

Case quoted from *Revue Médicale*, September, 1829. See above.

48. *American Journal of the Medical Sciences*. New Series, 1841, vol. ii, pp. 562—3.

Experiments of Lefortier in *Annales d'Hygiène*, July, 1840, referred to. No symptoms given.

49. *American Journal of the Medical Sciences*. New Series 1842, vol. iv, p. 487.

Three fatal cases at Lyons referred to, but no symptoms given. See original report in *Journal de Chimie Médicale*.

50. *American Journal of the Medical Sciences*. New Series, 1844, vol. viii, pp. 261—3.

Quotation (apparently abridged) from *Oesterr. Med. Wochenschrift*. Dr. Beers was called to see five children, aged from 3 to 11, poisoned by eating sweetmeats containing *Oxide of Copper*. Some were seized immediately after eating, others a few hours afterwards. Symptoms were great thirst, headache, vertigo, nausea, dryness of mouth, vomiting of a dark brown or green matter, severe pain in bowels and tenderness to touch, retention of urine, obstinate constipation with constant tenesmus and cold sweats. These were succeeded by violent pains in the head, light delirium, spasms and somnolency, which last in three cases was followed by coma. In a patient 11 years old diarrhœa occurred, and in another vomiting of blood. In two cases a difficulty of passing urine continued for several days.

Cases observed by M. Regnard mentioned.

These cases are translated from *Encyclographie des Sciences Medicales*, August and October, 1843.

Experiments by MM. Danger and Flandin from *Royal Academy of Sciences of Paris*, Meeting of July 24th, 1843.

Copper causes in animals salivation or a copious bronchial secretion, which ordinarily occurs a few hours after the poisoning.

51. *American Journal of the Medical Sciences*. New Series, 1846, vol. ii, p. 470.

Observations by Blandet. See above.

52. *London Medical Repository and Review*. Third series, 1828, vol. 6, p. 277.

Case quoted from *Journal Générale de Médecine*, Nov., 1827. See above.

53. *London Journal of Medicine*, 1850, vol. ii, pp. 976—8. References to cases of poisoning in *Medical Gazette*, Feb. 16th, 1849, vol. xliii, p. 304, and *Medical Times*, April 28th, 1849, vol. xix, p. 507 (see originals below); and *Medical Gazette*, Sept. 21st, 1849, vol. xlv (vol. ix of New Series,) p. 487. See original above.

54. *London Medical Review and Magazine*, 1800, vol. iv, p. 183. From Dr. J. Fahner's *Beiträge zur praktischen und gerichtlichen Heilkunde, &c*, 1799, vol. i, published by Franzer and Grosse, of Stendal.

A young man died seventy-eight hours after eating beans warmed up with vinegar in a tinned copper vessel.

Post-mortem.—Stomach appeared green, its coats were contracted, and found almost as thick as a quill. The intestines and stomach contained a green fluid. The whole body was of a deep yellow colour, and all the nails of his hands and feet were of a deep livid appearance.

55. *Medical Observations and Enquiries*, 2nd edition, 1762, vol. ii, p. 1.

Dr. John Travis asserts that the use of copper vessels in the navy is one of the principal causes of sea scurvy.

56. *Medical Observations and Enquiries*. Remarks by Dr. James Ramsay.

CASE 1.—A boy, æt. 14, ate some peas which had been in a copper kettle containing verdigris. He was suddenly seized with convulsions and fell down on deck insensible; he continued a quarter of an hour with eyes fixed, face convulsed, and head turned awry. On applying *Sp. c. c.* to his nose, making him swallow some of it, and bathing his hands in cold water, he became a little sensible. I gave a slight anodyne which he immediately vomited together with a large quantity of yellow bile. He then was ordered an emetic, but before it could be given he fell asleep. In the night time he was frequently convulsed, cried out like a child, talked incoherently, and struggled so that two men could scarcely hold him. In the morning he complained of pains in his bones and head, with sickness at stomach. In two days he recovered.

CASE 2. September 8th.—Some people on board the *Vestal* had been taken suddenly ill. On 6th one man was seized in an instant with a dulness, stupidity, and headache; he fell down and struggled so hard that it required six men to hold him; he shortly became delirious and behaved in the most extravagant manner. On 7th several more men were seized, and on 8th to the number of sixteen more. They are all at times outrageous and mad, they snap with their teeth at those who hold them, and struggle very much. One fancies himself a captain and gives orders accordingly; a second calls out "Ground ivy to sell"; a third "Old chairs to mend." One spits in your face and laughs heartily upon it; one is very merry and sings; his neighbour is snarly and ill-natured; and another mopes in a corner stupid and insensible. They all have their lucid intervals, and they complain of pains in the bones and of headache. Pulse during the fit is full, quick, and strong; a sweat breaks out and it becomes soft; their eyes appear red and inflamed; their looks are wild; their speech incoherent; they sleep little. None complain of gripes, and few of nausea. At the first several vomited, but no immediate relief followed. The people are chiefly seized after dinner. The whole recovered in two or three days. Dr. Ramsey attributes these attacks to the copper vessels used in cooking their food. A few months afterwards the like malady prevailed in the *Adventure*, and was attended by the same odd symptoms. The copper vessels were found to be very foul, and on remedying that fault the disease stopped, and about fifteen who were seized with it recovered.

57. *Philadelphia Medical Museum*, 1806, vol. ii, p. 178.

Case reported by Dr. William Budd.

A boy, æt. 3 years, swallowed a cent on evening of Dec. 31st, about an hour before he was visited; he complained of sickness at the stomach, which was soon succeeded by severe vomiting, and continued till next morning.

Jan. 1st.—Pain in stomach and sore throat; bowels freely opened with castor oil.

2nd.—Yesterday salivation, which has increased to nearly one pound in twenty-four hours; it appears to be pure saliva, attended with some swelling of tongue and salivary glands. The

oil produced several stools, some of them green ; still has pain in stomach.

4th.—Great pain in abdomen, which is swelled and hard, no stool for forty-eight hours ; mouth continues swelled and discharges about a pint a day ; begins to have an appetite, but cannot swallow much solid food.

5th.—Bowels freely open from the oil, which removed the pain and hardness of abdomen ; the spitting and soreness of mouth less.

7th.—The cent came from him this morning without any pain.

From 5th until the cent was discharged he continued to have a sore mouth and throat ; and if the oil was omitted for twenty-four hours, the abdomen would become swelled, painful, and hard.

58. *Northern Journal of Medicine*. By Dr. William Siller. 1846, vol. iv, p. 119.

Health among workers in copper. The copper colic happens very seldom. The green colour communicated to the hair and skin is very remarkable ; it is most striking in those having fair hair.

59. *British Annals of Medicine*, 1837, vol. ii, p. 310.

Translated from *Bulletin Général de Thérapeutique*. The case was treated by Andral.

A painter, æt. 40, came into *La Charité* about noon, having taken an ounce of sulphate of copper in the morning. He suffered from violent colic, but had been able to walk to the hospital. There was frequent and painful vomiting of a bluish matter. He died in the evening.

Post-mortem.—Œsophagus a livid red ; the whole of the stomach of a bluish hue, which could be washed off ; under this colouring the mucous membrane was a deep red ; the intestinal tube throughout its entire length was of a uniform port wine colour, and gave evidence of the violent inflammation.

60. *New England Journal of Medicine and Surgery*, 1814, vol. iii, p. 156.

Case by Dr. James Jackson.

A boy, four years old, swallowed a half cent. There ensued

almost immediately a nausea and a great flow of saliva from the mouth. Within twenty-four hours he began to vomit. He continued to vomit at intervals for eight days, and at times it was almost incessant for hours, and in the highest degree distressing. He threw up his food and some bile ; but much of the time he was troubled with vain retchings. About the fifth day he had three very offensive and copious stools which were uncommonly green. He derived some relief from these evacuations. He often complained of pain in the abdomen, which seemed to be in the umbilical region. The first solid food which he retained was in the night of the eighth day. He then awoke and called for brown bread, and continued to demand it with great vehemence till he had eaten three large slices. He retained them all and from that time was convalescent. For several weeks he experienced nausea whenever he attempted to swallow animal food, though he chewed it abundantly. Hot water fomentations to the epigastrium relieved him.

61. *Boston Medical and Surgical Journal*, 1829, vol. ii, p. 305.

Cases of poisoning by milk containing *Subacetate of Copper*, by Dr. F. J. Higginson.

May 21st, at 11 a.m., was called to see the patients—four in number—the *lady* of the family, her *child* (a girl aged 4 or 5), a *young servant woman*, and a *little girl* (servant). About 9 a.m., two hours after breakfast, in quick succession and with little warning, they were taken with nausea and vomiting. All except the last had taken *Ipec.*, which by 11 a.m. had produced its full effect. At 11 a.m. the *lady* was complaining of violent pain in stomach, which had come on a few minutes before, the vomiting having previously ceased. Her countenance was very pale, her skin cool and moist, and her pulse feeble, though not extremely so. She was soon put into bed. Her *child* was lying in the lap, quiet, and unwilling to be disturbed, but not in much apparent suffering. She was very pale, lips slightly livid, skin cool and moist, pulse feeble. She had vomited a great deal and was still occasionally retching. The *young woman* was the worst ; her countenance was deadly pale, lips and eyelids sublivid, her expression wild. As I entered she was tossing her arms about and stamping violently on the floor. She was, however, soon calmed, the fits being evidently of an hysteric character.

She had continual and violent retchings, and complained of severe pain at stomach. The *little girl* was apparently more easy. Soon after her attack she had a slight dejection which relieved her for some time. Soon afterwards the master of the house, who had come home, was seized in the same manner. Soon after this two other male members of the family came home sick from their place of business. *Opium* and *Comp. infus. sennæ* were given with relief. In one or two cases the coldness of the surface increased; in the *child* it became extreme, and for some time there was no pulse at the wrist; she came to, however, under the use of paregoric and warm water. Next day a good deal of weakness was the only symptom.

62. *Boston Medical and Surgical Journal*, 1856, vol. lv, p. 124.

Reported by Dr. Salter, to the *Boston Society for Medical Improvement*.

A man, æt. 27, arrived in Boston in November, 1855, and engaged himself to a coppersmith as general hand. About the middle of March, 1856, he first noticed a deviation from his uniformly good state of health. For some time previous to this period th had occasionally noticed a peculiar sweetish taste in his mouth, and a slight constriction in fauces, with a slight sense of nausea. The symptoms of which he complained were a peculiar sense of weight, weakness, and oppression in the epigastric region, a disagreeable and nauseous taste in mouth, diminution of his usual appetite, which at length entirely failed, constipation, which ultimately became very obstinate, general languor and prostration. These symptoms were soon followed by cardialgia, morbid sensibility of the epigastric and hypochondriac regions, epigastric sinking, a disposition to remove some offending substance from his stomach, unaccompanied by nausea, for the ejection of which he would frequently irritate the fauces with his finger, and epigastric palpitation. These were soon followed by neuralgic pains in various parts of his body, stomach, intestines, hips, and lower extremities, chest, head, superior extremities, the paroxysms varying in intensity and duration, more persistent in head and hips than elsewhere; great weakness of hips and lower extremities; giddiness, numbness of different parts of upper and lower extremities, which under certain circumstances was attended by intense

pricking pains in various parts of the body; a peculiar sensation of right hand and forearm, consisting in a sense of constriction of the different parts and of great increase of size—it seeming to him at times to be larger than his whole body, and its motions not fully under the control of his will; also a difficulty in urinating, consisting in a painful inability, requiring considerable time and effort to relieve the bladder. Shortness of breath, occasional paroxysms of coughing, unattended with any physical signs of disease of the lungs; great wakefulness; profuse night sweats; rapid emaciation and great depression of spirits. When first seen on May 17th last he presented no striking indications of illness except some paleness and thinness of face, but he detailed the above symptoms. His tongue was coated with a light brown or cream-coloured fur, except the edges and tip, which were clean and of a pale red colour, the whole tongue being moist. Gums were lax and spongy for about $\frac{1}{8}$ inch from the teeth, through nearly their whole extent, and for the same extent their edges were withdrawn from the teeth; he had occasionally spit blood from the mouth, especially on rising from bed in morning. Pupils abnormally dilated, insensible to a strong light. Pulse ranged from 58 to 62, was rather slow, moderately full and regular but weak. The edge of the gums was retracted or drawn from its natural contact with the teeth in such a way as to give the appearance of a very narrow bevelled surface throughout their whole extent. On this bevelled surface there was a delicate shade of red purple.

Corrigan's cases are also referred to. See original above.

63. *New Sydenham Society's Publications*, vol. xxxii, pp. 437, 438. (*Biennial Retrospect* for 1865-6.)

Taylor's cases quoted from *Guy's Hospital Reports*. See above.

64. *New Sydenham Society's Publications*, vol. xxv, p. 430.

A case reported by Chevallier in *Journ. de Chim. Med.*, vol. ix, p. 401, is referred to, but no symptoms given.

65. *New Sydenham Society's Publications*, vol. xxiii, pp. 414, 415.

Two cases of colic in boys working in copper are quoted from the *Bull. de Thér.*, vol. lxxv, p. 80. The pain was attended with slight constipation. The black line on the gums was distinct in

each case, and in one the gums were also swollen and ulcerated at their edges.

66. *New Sydenham Society's Publications*, vol. x, p. 451.

This case is evidently a mere abridgment. Oppolzer relates in the *Deut.-Klinik*, No. 19, 1859, several cases of chronic poisoning in copper workmen. There was colic in some cases followed by a paralysis of the upper limbs not distinguishable from that of lead. There was greenish-yellow tinge of countenance, and diarrhoea alternating with constipation.

67. *New Sydenham Society's Publications*, vol. xv, p. 413.

Case reported in *Nass. Med. Jahrbuch*, vols. xv, xvi, p. 743. *Schmidt*, vol. iii, p. 24.

A robust man took an ounce of a *Solution of Copper*. He at once had intense abdominal pain, with vomiting and purging of green matter, which continued till the third day, when the author was called in. He was then much emaciated, complexion leaden, extreme muscular weakness, foul dry tongue, excessive thirst, abdominal tenderness on pressure, and abundant salivation. On sixth day he became jaundiced. The bowels not having been relieved, *Castor oil* was given, which produced free evacuations containing traces of green matter. From eighth day he became gradually weaker and died on sixteenth day.

68. *Southern Journal of Medicine and Pharmacy* (Charleston) 1847, vol. ii, p. 356.

Case quoted from *Chemist*, 1847. New Series, vol. v, p. 91. See original below.

69. *American Journal of Medical Sciences*, 1862, vol. xliii. New Series, p. 278.

Perron's cases quoted from *Med. Times and Gazette*. See above.

70. *London Medical Gazette*, 1842-3. New Series, vol. i, p. 495.

Poisoning by *Carbonate of Copper* reported by Dégrange in *Journal de Médecine Pratiques de Bordeaux*.

A man, Aug. 8th, complained of suffering much; on the

previous day he had vomited several times and been unwilling to eat. The same day he was found about 11 o'clock stretched almost without consciousness in the yard of his house. He died at 4, having passed the intervening time in a comatose state, neither answering questions nor giving any signs of intelligence. (He had apparently, after having drunk the poison, fallen out of a window, as there were several contusions on his head.) Face was pale, eyes turned upwards, breathing free but hurried, upper and lower extremities of icy coldness, and covered with a cold sweat, swallowing was painful, no stool or vomiting, abdomen not sensitive to pressure.

Post-mortem.—Very decided sanguineous congestion over brain; mucous lining membrane of cheeks discoloured. Mucous membrane of oesophagus offered several marked arborisations. Stomach had a diffused green colour (? from the greenish poison), a decided vascularity towards the greater curvature, and seven or eight points of ulceration in the great curvature which had eaten through the whole thickness of the mucous membrane. The entire mass of intestines had a greenish tint (? from the green poison); in several parts of them ecchymoses were to be seen with blackish spots and vascular ramifications, with softening of the mucous membrane, which were more apparent in the first half of the duodenum; none in the ileum. Large intestines and rectum were filled with ash-coloured fæces. Heart was filled with black clotted blood, and its lining membrane was of a bright red.

71. *The Chemist*, 1840, vol. i, p. 380. Reported by Dr. J. P. Simon.

Effect of inhaling the vapour of a hot aqueous solution of sulphate of copper and dipping the hands in it.

I began to feel uneasiness between the shoulders, with headaches, shivering, and occasional pain in the epigastric region. I became pale, had vertigo with prostration of strength and dim sight; the nervous papillæ of the tongue became tumefied and horribly annoying; I first thought that I had scalded my tongue with hot broth, but the symptoms increased, the tongue became ulcerated in the centre, and considerably swollen on each side, and it was furred as if a "tartine" of spermaceti ointment had been nicely spread over it; the fauces also became tumefied and

inflamed, while the soft palate or roof of mouth became coated with petechiæ, resembling measles, with tamed gums and slight ptialism.

I was obliged to discontinue my experiments. After a time I renewed them, although I had often felt a copperish cold subacid taste, particularly on opening my mouth to inhale fresh air, and although after having washed my hands three or four times the water became blue from the sulphate of copper absorbed into the system. I accordingly dissolved two or three pounds of the sulphate in the usual way, and on the second day of my experiments began to feel headache, and uneasiness about the fauces and soft palate; first the affection showed itself on the tip of the tongue, but now it showed itself as above. There was considerable itchiness and sudden feeling as if I was going to faint. I looked in my mouth and *felt* and *saw* that the symptoms were fast returning.

72. *The Chemist*, 1842, vol. iii, p. 253. Copied from *Journal de Chimie Medicale*, Jan., 1842.

A young man drank some wine which had been drawn into a copper vessel; he was almost immediately seized with violent pains in the digestive organs; he immediately vomited violently and threw up all the poison.

Three other cases of poisoning are referred to, but no symptoms given.

73. *Braithwaite's Retrospect of Medicine*, 1854, vol. xxx, p. 433.

Corrigan's cases referred to from *Dublin Hospital Gazette*, 1854, p. 232. See original above.

74. *Chemist*, 1855, 3rd series, vol. ii, p. 570.

Experiments by Scharder on rabbits with *Acetate of Copper*, from the *Deutsche Klinik*, 1855, No. 4, are mentioned.

75. *Dublin Medical Press*, 1856, vol. xxxv, p. 119.

Extract from *Journal de Médecine et de Chirurgie Pratiques*, February, 1856, p. 92, and *Bulletin de Thérapeutique*, where the original account seems to have been given. Case is reported by Stanislas Martin of a man who worked in copper for five months, whose hair changed from white to green.

76. *Lancet*, 1836-7, vol. ii, pp. 566, 641.

Lectures on Medical Jurisprudence by Dr. A. T. Thomson.

In 1781, twenty friars in Paris were poisoned by fish boiled with vinegar in a copper vessel. (See above, No. 33.) Dupuytren mentions poisoning by lobsters boiled in a similar manner. Fodère mentions a case which occurred at Aoste in 1790. In 1592, at Berne, at a great meeting of the senate, wine was drank which had been put into copper vessels; in a few days many were seized with colics, vomitings, and purgings, and several died.

Thomson next gives the ordinary symptoms of copper poisoning. On swallowing it there is an aridity of the tongue and a styptic taste in the mouth. The other symptoms generally occur in the night; the person wakes with a violent headache, with sensation of great debility in the limbs, painful cramps; after a short time there is colic, with nausea and vomiting, first of *ingesta*, then of bilious matters. The colic increases in severity; tremblings of the limbs with copious sweats accompany it; the pulse is small, unequal, and very frequent; diarrhoea or constant and ineffectual desire to evacuate the bowels follows, with swelling and tenderness of abdomen; stools are blackish-green or green, rarely tinged with blood; suppression of urine; respiration disturbed; heart's action weak; pulse small and irregular. Convulsions, paralysis, occasionally tetanus with great rigidity of limbs, vertigo and syncope, deep yellow colour of skin like jaundice, and a singular tinge of blue round eyes. (The above symptoms were compiled from various cases of poisoning and not one single case.)

Pyll's case of poisoning referred to.

Percival's case quoted. See original above.

Thomson's remarks on the post-mortem appearances (compiled from various sources). The skin yellow like jaundice; gullet constricted; lungs inflamed, and the blood in the pulmonary vessels black and fluid, but sometimes coagulated. Mucous membrane of the alimentary canal exhibits in various spots a greenish hue. Inflammation and even ulceration and gangrene occupy it also, in detached spots, both in the stomach and intestines. The smaller intestines are more affected than the larger, and sometimes perforated.

77. *Lancet*, 1837-8, vol. i, p. 930. Lectures by Dr. G. G. Sigmond.

Case quoted from Orfila. A jeweller's workman swallowed half an ounce of verdigris in water. In fifteen minutes he was attacked with colic pains and profuse vomiting and purging. Eight hours afterwards there was not much vomiting, but frequent eructation of a fluid containing verdigris, some salivation; a small pulse; blueness about the eyes. In sixteen hours jaundice began to appear. In the course of the night he was much relieved from the colic pains by three stools; next morning he had ceased to vomit, and the pain had gone, but he complained of a taste of copper in his mouth, and jaundice had increased. On fourth day he was well.

Sigmond's own remarks.—When the poisoning ends fatally, convulsions and paralysis occur, occasionally tetanus with great rigidity of limbs.

Percival's case referred to. See above.

Portal's case referred to.

Sigmond's own remarks.—*Sulphate of Copper* is an emetic, and often leaves behind it a state of nausea from which the stomach does not very speedily recover itself. Pain in throat and stomach often remain some time after recovery, as is exemplified by a case of Dr. Marcet.

78. *Medico-Chirurgical Review and Journal of Medical Science*, 1820, vol. i, p. 158.

Case by Dr. Saurel from *Journal General de Medicine*.

A man ate some peas which had stood in a copper vessel. He was seized with violent pains in stomach and belly, with vomiting, purging, and tenesmus.

79. *British and Foreign Medical Review*, 1844, vol. xviii, pp. 549—52.

Experiments of MM. Danger and Flandin in *Annales d'Hygiène*, vol. xxx, p. 449, referred to.

Case reported by *Guillo* quoted. See above.

Case of poisoning by the subchloride of copper quoted from Henke's *Zeitschrift der S.A.* for 1843-4; No. 1, 1844. A boy aged two or three swallowed the poison in paint. Very soon afterwards he was attacked with vomiting and coldness of the ex-

tremities; he became worse and died. *Post-mortem*, slight congestion of cerebral vessels.

80. *Chemist*, 1843, vol. iv, p. 86.

Dégrange's case quoted. See original above.

81. *Chemist*, 1843, vol. iv, p. 331.

Case quoted from *Auxiliaire Breton*, from tapioca impregnated with copper (as the editor of the *Chemist* considers).

82. *Chemist*, 1845, vol. vi, p. 279.

Blandet's remarks quoted. See above.

83. *Chemist*, 1847, vol. viii, p. 91

Case of poisoning by *Sulphate of Copper*. See above.

84. *Chemist*, 1847, vol. viii, p. 179.

Remarks by Professor Sewell before the Royal Agricultural Society of England. The joint-bones of animals living within the influence of the effluvia from the copper mines at Swansea became diseased, by accumulations of irregular masses of bony matters concreting about the joint and by decay in the substance of the natural bone, similar to the effects of mercury.

85. *Medico-Chirurgical Review and Journal of Practical Medicine*, 1833, vol. xviii, p. 528.

Postel's experiments quoted from *Bulletin de Thérapeutique*.

Two dogs took a drachm of verdigris mixed with four oz. of water. In a few minutes both began to moan, vomited, and passed a stool which was tinged with blue. (These experiments are given very briefly and others are referred to. The original should be examined.)

86. *Medical Circular*, 1854, vol. v, p. 136.

Corrigan's cases referred to. See original above.

87. *The Doctor*, 1832, vol. i, p. 226.

Percival's case referred to. See original above.

88. *The Doctor*, 1832, vol. i, p. 230.

An editorial remark. The patients waste and decline; the frequent occurrence of palsies, nervous disorders, and complaints

of the stomach are probably in part owing to this and such-like causes.

Five monks out of thirteen on the Continent, who ate soup thus poisoned, died after excruciating pains in stomach and bowels.

89. *The Doctor*, 1835, vol. iii, p. 243.

Case quoted. See above.

90. *British and Foreign Medico-Chirurgical Review*, 1851, vol. vii, p. 282.

Review of a paper by MM. Chevallier and Boys de Loury. The only symptoms quoted are dyspnœa, dryness of the air-passages, a small filiform pulse, absence of transpiration, scarcity of urine, cephalalgia, and torpor; the characteristic symptoms are cardialgia with epigastric tenderness, and a neuralgic pain in the rectum; *pruritus ani* and constipation are usually present. See *Annales d'Hygiène*, vol. xliii, pp. 387-78, vol. xliv, pp. 27-48; and *Revue Médico-Chirurgicale*, vol. viii, p. 38.

91. *British and Foreign Medico-Chirurgical Review*, 1854, vol. xiii, p. 575.

Cases referred to from *Journal de Chimie Médicale*, January, and *Annales d'Hygiène*, January. No symptoms given.

92. *British and Foreign Medico-Chirurgical Review*, 1855, vol. xv, p. 295.

Corrigan's cases referred to. See original above.

Case by Dr. Reinhardt quoted from *Henke's Zeitschrift, dritter Vierteljahrschrift*, 1854.

A man, æt. 26, took one ounce and a half of verdigris at 1 p.m. In about half an hour he felt ill and vomited some of the poison. In about three quarters of an hour the vomiting returned; in the interval he had severe pain over the eyes and colic-like pain in the stomach, which was somewhat relieved by an oleaginous mixture. On his way to the hospital in the evening he vomited several times. On admission, he complained of pain in the head, a metallic taste in the mouth, and colic pains, with feeling of distension of the abdomen; the left hypochondrium was tender to pressure; pulse and temperature of skin normal. After treatment the symptoms abated, but recurred with increased severity at 3 a.m., with the addition of *ardor urinæ*. Patient recovered.

98. *British and Foreign Medico-Chirurgical Review*, 1856, vol. xvii, p. 520.

Experiments by Dr. Scharder in *Deutsche Klinik*, No. 4, 1855, referred to.

94. *British and Foreign Medico-Chirurgical Review*, 1861, vol. xxvii, p. 534.

Notice of an essay entitled *Accidents causés par de l'eau contenant un Composé de Cuivre*, by A. Devergie, Gobley and Robin. No symptoms given.

95. *Ranking's Half-yearly Abstract of the Medical Sciences*, 1845, vol. ii, p. 414.

Blandet's remarks on copper, quoted from *Gazette Medical de Paris*, February, 1845. See above.

96. *Ranking's Half-yearly Abstract of the Medical Sciences*, 1865, vol. xli, p. 31.

Review of a memoir by Dr. C. Maissonneuve from *Archives de Médecine Navale*, January, 1865. The only symptoms here quoted are the following: very intense dyspnœa with laryngeal and bronchial spasm. Colic, which may be accompanied by vomiting or diarrhœa. Pain in the upper and middle abdominal region, increased by pressure; in some cases it is limited to the pit of the stomach, in others it is seated a little lower down between the epigastrium and the umbilicus, somewhat about the position of the transverse colon. In all cases there is nausea, in some vomiting, in a very few diarrhœas. There is occasionally some fever. The attack is generally over by the next morning, rarely extending over two or three days.

97. *Transactions of the Provincial Medical and Surgical Association*, 1844, vol. xii, p. 180.

Dégrange's remarks quoted. See above.

98. *Transactions of the Provincial Medical and Surgical Association*, 1845, vol. xiii, p. 119.

Experiments of Flandin and Danger referred to. See above.

99. *Transactions of the Clinical Society of London*, 1870, vol. iii, p. 7. (Compare Nos. 7 and 29.)

By Dr. Edward Clapton.

CASE .—A sailor had had to drink for a long time lemon

juice which had been kept in a copper tank. He was a very thin miserable-looking man, suffering from chronic gastro-enteritis. The rest of the crew suffered similarly. His symptoms were frequent vomiting, purging, griping, a patchy tongue partly furred and partly morbidly red, a feeling of constriction in the throat, coldness and numbness of the extremities, a small frequent pulse, constant headache, and frequent cramp of legs. There was a most marked green line on the margin of the gums and for some little distance on the teeth.

CASE 2.—I noticed a similar appearance in the gums and teeth of a young woman who was employed in an artificial flower manufactory, where she inhaled the dust of verdigris and emerald green.

CASE 3.—The case of the workman at Deptford is given more completely elsewhere ; but the following symptoms from various workmen are here added. There is a greenish colour of the hair in old workmen. Diuresis is not uncommon ; one man passed five or six pints of urine daily, but there was no trace of sugar in it, nor was its sp. gr. ever above 1014.

Reference is made to a case reported in Erasmus Wilson's work on *Skin Diseases*.

100. *Asiatic Journal*, 1830, vol. iii, p. 87. (*New series*.)

Reported by Mr. Raleigh.

A man swallowed a quantity of *Acetate of Copper* ; at 8 p.m. he was taken to the hospital in a highly apoplectic state. He was quite comatose, pupils dilated to their utmost extent, pulse slow, hard, and labouring, but not full, countenance bloated and purple, foam issuing from the mouth, skin warm, breath smelling of peppermint. All mental and voluntary powers were completely suspended. He was bled, the stomach washed out, and three drops of *Croton oil* placed on his tongue. Soon after the bleeding the pulse became small and soft but rapid ; pupils contracted, and appeared slightly affected by the light of a candle ; breathing became more natural. In twenty-five minutes the pulse fell to 100, and the body was covered with sweat. At 9 p.m. head was shaved, and thirty leeches applied. At 10 p.m. pulse was 154, pupils contracted, stationary, and unaffected by light of candle. At 8 a.m. he became perfectly sensible, and complained of headache, pain, and severe spasms of stomach, with unquenchable thirst,

and occasional cramps of the lower extremities. There was a peculiar state of languor. Soon after taking the poison the uneasiness of the œsophagus and stomach became so intolerable that he swallowed about an ounce of *Essential Oil of Peppermint* and became insensible.

101. *Philosophical Transactions*, 1758, vol. 1, p. 19, and sequel in 1765, vol. liv, p. 15.

By Dr. James Mounsey.

Mr. Butler placed one quarter of an ounce of verdigris in a pot, and two leaves of false goldleaf in another, and poured on each about a spoonful of *Nitric acid*, and then stirred them very assiduously. Soon afterwards he felt a burning pain in the ring finger of the right hand; this increased every moment, and affected the whole hand with burning pain and swelling, which very soon subsided; but then it flew into the left hand, and a few minutes afterwards into the insides of his legs, as if scalding water had been thrown on them. His stockings being immediately pulled off, there appeared a great many red spots, as large as sixpences, somewhat raised above the skin, and all covered with very small blisters. In about two hours after the accident I first saw him; he was very uneasy, complaining of pain and great anxiety at the pit of the stomach, as if a burning hot iron was laid on it. His pulse was regular, but slower and weaker than natural; he had nausea, and complained of a very coppery taste and smell. I ordered some alkaline volatile medicines, and to drink small sack-whey. He vomited once and had four or five stools, and then his stomach grew easy. But the scene soon began again with lancing pain in left eye. He continued the same medicines, drank plentifully of whey, and was kept in a sweat, by which he found some ease at night; but whenever the sweating lessened, the burning pains returned in broad flakes, changing from one part of the body to the other; sometimes with shootings in the eye, and sometimes along the penis, but he had no heat of urine. Pulse continued regular but weak; and in several places of his body spots similar to those on his legs came out.

3rd day.—Morning after sleeping well, pulse was somewhat raised, and he continued easy till about 11 a.m., when the burning pains returned, shooting from place to place; but always so

superficial, that he could not distinguish whether it was in or under the skin. Rubbing the part affected with the hand gave ease; but when the sweating ceased, and the burnings and shootings became insufferable, I always put him into a bath of hot water with some wood ashes, which gave him great relief. This afternoon he felt violent burning pain in his great toes, and sometimes in his left hand, with shootings up to the shoulder. Once he cried out in great pain that his shoulder was burst, for he felt something fly out with a sort of explosion; but I found nothing particular on examining the part. He observed, when the flaky burnings began, they were as if they kindled from a point, and flashed like lightning. He was very often tormented with such pains on the pit of the stomach; and this evening had shootings through the back with a pain in the belly. He complained of a strong sulphurous suffocating smell, though his breathing seemed easy, and his lungs in no way affected. In the night he was seized with great pain about the heart, and cried out violently that his heart was on fire; but after taking a dose of nervous medicine, and being put into the bath, he was soon freed from this, and passed the rest of the night tolerably well. At the time of such violent attacks the pulse continued regular, but still slower and softer than usual.

4th day.—He complained most of his toes, and now and then burning pains in the forehead.

5th day.—This whole day it continued most in the left toes; but in the evening the pains in the stomach returned, which lanced to the left side with dartings inwardly. He had become so unwell and restless that I added *Opium* to his other medicines.

6th day.—The pains kept most in the left toes.

7th day.—Nothing particular except his feeling, with sharp pains, a spark (as he called it) fly out of his right cheek, in the same way, he said, as that which burst on his shoulder, but much less. He perceived no pain in that part before this; nor anything after besides a soreness which lasted some days.

9th day.—He began to get out of bed; but was often seized with glowing pains, suddenly affecting different parts of the body; they seldom continued an hour in one part, but shifted from place to place; he continued to be troubled with these in a less degree for a long time.

Sequel.—The patient recovered his health and strength, yet after this was often subject to nervous ailments, and became sensibly affected not only by the smell of paints, but even the handling of some kinds of metallic inodorous bodies gave him anxiety, tremor, faintings, and many other uneasy symptoms. The handling of verdigris, vitriol, and the like, threw him into these disorders, and he assured me that the handling copper or iron had the same effect.

One day he handled some lumps of *Ocerussa* (i.e. white lead); in a few hours he was taken with anxiety, palpitation of the heart, and a sense of trembling and weakness of the whole body; he was obliged to go to bed; he took some *Spirits of Hartshorn*, sweated most plentifully, and next day recovered. The most extraordinary attack happened June 26th, 1758. He had handled with his right hand a mixture of blue vitriol, alum, quicklime, burnt alabaster, which had been boiled in water. In three hours he began to be uneasy, had pain in his arms, and especially in his right hand; he became sick at stomach, and felt a trembling over his whole body. He strove to get the better of this attack, and walked about slowly for some time, but turned pale, faint, and fell down. He soon recovered, and drank two or three glasses of wine which he vomited. This began at noon, and at 6 p.m. I found him in bed, frightened and sweating. His pulse was regular but quick; he was sick at stomach, with anxiety. I ordered him saline draughts, with plenty of thin warm liquors. In the night he slept indifferently; his complaints were not continual, but recurred by fits, with stretchings of the limbs, tremor, and starting of the tendons over the whole body, and when he began to slumber he was disturbed with frightful dreams of fire.

2nd day.—Early in the morning he observed many small purple spots on his hand. I found them just like purple petechiæ; the most on his right arm, and perceptible through the thick skin of the right palm. There was also some on the other arm and legs, and some of a deeper colour on the thighs, but very few on the rest of the body. About 4 p.m. he was again seized with great anxiety, and pricking burning pains in the feet; the toes were extraordinarily red, and he had frequent stretchings. These went almost off in a few hours.

3rd day.—Not so much troubled with the frequent returns of

his complaints; his pulse was quick, and the spots kept out with itching.

4th day.—Much the same as yesterday, only more cheerful in the intervals, and the spots appeared fewer. He got often out of bed, and walked about in the room.

5th day.—Attacks returned much seldomer; pulse still feverish. Many of the spots disappeared; most were grown pale, and some of a dun hue; those on the right palm were almost gone. He said the spots always grew fairer every time the fits returned, and then he felt pricking pain with great heat, especially on the inside of his arms and legs and in his feet and toes.

6th day.—Pulse still quick. Last night had been tolerably well. Spots pale and disappearing. Took a laxative, which operated.

7th day.—Rested fairly last night, but this morning the pricking and tremorous sensation over the whole body returned, but did not last long. Spots mostly gone. He observed that the pricking pains in his arms and legs, and in a large spot on his back (which troubled him in all his former accidents), came now only in the forenoon, and then almost ceased for the rest of the day.

8th day.—Much the same, but the attacks were lighter.

9th day.—Very little difference; only now and then he was troubled with a glowing painful sensation immediately under the skin, sometimes in one part of the body, sometimes in another, a spot about the size of a crown piece.

12th day.—Somewhat better. I now gave him a mixture containing *Peruvian bark*, *Orange*, *Ammoniacum*, *Myrrh*, *Sal Martis*; and as he was very sensitive to *Iron*, I gave scarcely two grains of *Sal Martis* for a dose.

13th day.—Took a dose this night, was very restless, and greatly affected with all the former symptoms.

14th day.—Took another dose early in morning. In less than three hours was again taken very ill with anxiety, a sense of trembling over the whole body, and as if prickling sparks were flying out everywhere.

15th day.—Ceased the medicine. Passed the night tolerably, and felt much better in the morning; but the complaints came by turns as before.

25th day.—The complaints have returned at intervals during this time. I gave him a dose of *Epsom salts*, which he had been used to take; it purged very well, but as soon as its action ceased great numbers of small red spots came out on his body, with a little heat in the skin.

26th day.—Spots almost gone.

27th day.—Took another dose of *Epsom salts*; the spots returned in the same way, more than before. After this he took more doses; the spots returned, but every time fewer appeared, and at last none appeared on taking the salts.

36th day.—The attacks have grown much less frequent and lighter; often feel in the night-time like the stroke of an electrifying body.

48th day.—Was awake this night by pains as if burning irons had been clapped to the insides of his legs, with anxiety and a sense of tremor over the whole body. I found his pulse very quick, irregular, and small, but he was greatly better than when he sent for me. After this he had some smaller attacks, but in the night of 58th day was seized with a violent fit of the same sort, with stretchings, and as if prickling sparks were flying continually out of the skin. He had palpitation of the heart and complained of the want of breath; his left side turned cold and his right side grew hotter. When I came he was better, but the pulse still very small, frequent, and inordinate.

59th day.—He was again attacked in the same manner in the night, and it also went off in the same manner, but he now grew feverish and kept his bed some days.

By *stretchings* I mean the stretching of his body and limbs by a slow and gentle convulsion of the extensor muscles; I never observed the flexors affected. He often felt as if his left side, from head to waist, were empty, and that millions of small bodies were driven up and down with great velocity, which he compared to the shaking of peas in a bladder.

102. *The Medical Museum* (London), 1781, vol. i, p. 286 (2nd edition).

Water impregnated with verdigris brings on decay; many chronic diseases, especially the slow fever.

Reference is also made to M. Amy's *Treatise on Cisterns*, to which is added a thesis by Dr. Thierry.

103. *The Medical Museum*, 1781, vol. ii, p. 424 (2nd edition).

By Mr. Samuel More.

Case of a young man who lost the use of his hands from cleaning brass wire from the crust on it, which is performed by letting it lie in a mixture of water, sulphuric acid, alum, tartar, &c., and then striking it forcibly against the ground.

After working for some time at the wire, about August, 1759, the cuticle of the palms and the inside of the fingers became so hard and rigid that he could do no work. In August, 1760, the complaint having lasted a year without being benefited, I saw him. I found him with his hands quite stiff and incapable of doing any work; the skin of the palms (especially the right one) had the appearance of parchment, full of chaps; and when I endeavoured by force to straighten the fingers the blood started from every joint of them. He was cured.

104. *Philosophical Transactions*, vol. li, p. 936.

The above case quoted.

105. *Medical and Physical Journal*, 1830, vol. lxiii, p. 522.

An old woman took *Sulphate of Copper* (it is supposed two drachms); she soon vomited. In an hour she had severe pain in stomach and head; the vomiting continued, and next day she was nearly well.

106. *Narrative of the Efficacy of the Bath Waters in various kinds of Paralytic Disorders*. Published by the Bath Hospital, 1787; p. 31.

A man employed in pointing pins, which exposed him to the dust of the materials, was admitted with paralytic weakness of hands and wrists.

107. *Edinburgh Medical and Surgical Journal*, 1841, vol. lvi, p. 110.

By Dr. James Blake.

The injection of six grains of *Sulphate of Copper* into the veins gave rise to a quickened and fluttering action of the heart in ten minutes; in forty-five seconds more the pulsations became much slower; fifteen grains of the salt stopped the heart in twelve minutes. On opening the thorax at once the heart was motion-

less, excepting slight contractions of the intraventricular septum. Right side of heart contained a considerable quantity of dark blood; left cavities a smaller quantity, rather scarlet, but not so bright as arterial blood. Three grains caused efforts to vomit in two minutes. Four grains caused dyspnoea in fifteen seconds; the animal fell at once, but continued moving its legs, which were rather stiff; after lying on its side for four minutes it again rose on its legs during violent efforts to vomit, but soon fell down again. The action of heart was stopped by introducing six more grains; breathing ceased in forty-five seconds; the conjunctiva was sensible one minute after breathing had ceased. After breathing had stopped for two minutes it recommenced, and continued for a minute and a half.

108. *British Medical Journal*, 1872, vol. i, p. 154.

By Dr. W. A. Hollis.

A man, aged 35, who worked in metals (iron, brass, and steel only).

Dec. 10th, 3 a.m., suddenly woke and found he had lost use of right forearm and hand. The palsy affected the flexors and extensors. Some anæsthesia over back of forearm. Slight reddish-blue discoloration beneath left lower canine tooth.

Dec. 11.—Felt much better. Could extend fingers of right hand slightly. Bluish gum line rather more marked, and now extended beneath all lower incisors and canines. Gradually improved.

[Another similar case is given in which *lead* as well as brass was used; I have therefore omitted it as doubtful.—E. W. B.]

109. *British Medical Journal*, 1873, vol. i, p. 303.

By Dr. John Morgan.

A child, four years old, swallowed a penny. The face was swollen and discoloured, and she was constantly retching. The coin was removed from the throat. For two days afterwards the child was restless, constantly sick, and refused the breast. It recovered.

110. *Memoirs of Medical Society of London*, 1789, vol. ii, p. 224.

By Dr. Wm. Falconer.

Copper I have seen cause stiffness and rigidity, together with a

paralytic inability to open or contract the muscles of the fingers, but not that flabby texture of the muscles that *Lead* produces.

111. *London Medical Gazette*, 1838-9. New Series, vol. i, pp. 195 and 697.

By Mr. Gurney Turner.

Effects of working with "artificial gold."

CASE 1. July 17th.—J. O—, aged 19, complained of a most distressing itching of scrotum. It seemed relaxed and inflamed; the sebaceous follicles considerably enlarged; and round the roots of the hairs were small scabs, caused by his scratching the part to relieve the tingling sensation. The hair on scrotum and pubes was grass-green. The hair on head and in axillæ was of the same colour, and he had itching in these parts and about the wrists, though in a less degree, and the hair felt peculiarly harsh, dry, and matted. He stated that on the third day of having been employed he was seized with vomiting of a green fluid and a sensation of heat and constriction in œsophagus, with pain in stomach; this was followed by epistaxis, recurring at intervals, itching of the above-mentioned parts, especially of pubes and scrotum, tenderness of epigastrium and bowels, with loss of appetite and rest; bowels constipated. The eruption was much altered by scratching, but it seemed to have been primarily papular, subsequently becoming vesicular. By 26th was well, except as to the hair. Some of the workmen said the powder used caused deep ulcers on the genitals; others said it salivated them, and their jaws seemed slightly spongy. The workmen said beer relieved the sickness, and remained on the stomach when it rejected all solid food.

CASE 2.—Another workman complained of much soreness and dryness of throat, vomiting of a green fluid, general loss of appetite, great and continued irritability of stomach, sleeplessness, irritation about the genitals, wrists, and nose, and obstinate constipation. He said constipation was a general symptom among the workmen, as also was the greenness of hair. His own skin, as well as that of his fellow-workmen, turned greenish, and their sweat was the same colour. He thought it increased the quantity of urine. He added that it weakened the whole body, and especially the wrists, which trembled. Many had been thrown into violent fits from the irritation produced. Paullini says that copper miners have blue or green beards (see *Dictionnaire des*

Sciences Médicales, article *Barbes*). Haller makes the same remark. Patissier says the brass-workers have green complexions, eyes, tongue, hair, excretions, and even clothes.

Mr. G. Turner enumerates the symptoms produced thus, as constriction of œsophagus, tenderness of epigastrium and bowels, loss of appetite and rest, vomiting, constipation, and a general febrile state. He says that copper is the chief, if not the sole, ingredient of this powder.

112. *Half-yearly Abstract of Medical Sciences*, 1870, vol. li, p. 118.

Dr. Mapother's remarks quoted (see below).

113. *Medical Press and Circular*, 1870, vol. i, p. 465.

By Dr. E. D. Mapother.

J. M'D—, æt. 17, had been employed for two years and a half, in a Venetian blind factory, to mix Olympian green with turpentine and to remove the paint from old blinds with sand paper. This paint is finely powdered carbonate of copper. His skin has a pale, chlorotic look, and the gums round the incisors, canines, and bicuspid, especially of lower jaw, are a bright maroon colour. The gums are somewhat retracted and slightly ulcerated. Greatly emaciated and very weak, but no local palsy. For the last six months has been seized every three or four days with fits of fierce pain round the navel, relieved by pressure and disappearing by stool. For the last six months he only had one stool a week. When he had pain he had loathing of food and occasionally vomiting. He is distressed with a constant cough, but there is no evidence of tubercular or other disease in lungs. He suffers much from chilliness, almost amounting to ague fits, which sitting by the fire does not relieve, but it brings on weakening sweats.

The maroon colour of the gums appears only round those teeth which are exposed to light. In poisoning by lead, copper, and mercury the jaws ulcerate and the teeth get black and rough near the gums' edge.

114. *New York Journal of Medicine*. New Series, vol. xv, 1855, p. 292.

Corrigan's cases referred to (see above).

ARSENIC AND ITS COMPOUNDS.

1. *Lancet*, 1857, vol. i, p. 193.

Poisoning by paper coloured with *Scheele's green*.

By Dr. Hinds.

Dr. Hinds first used the room in the evening, sitting there and reading by gaslight. While thus engaged he was seized with severe depression, nausea, abdominal pain, and prostration. The same chain of symptoms ensued on every subsequent evening when he occupied the room.

A reference is also made to *Edinburgh Monthly Journal*, 1851, to Dr. Traill's case, reported below (Case 3).

2. *Lancet*, 1859, vol. i, p. 237.

Poisoning by *Arsenite of Copper*.

By Dr. H. Cooper Rose.

The child was nine months old, and had been suddenly taken ill. Dr. Rose found that the child had been violently vomiting and purging during the previous half hour. He was now cold and clammy to the touch, the pulse not perceptible at the wrist, and with all the symptoms of collapse arising from irritant poison.

3. *London and Edinburgh Journal of Medical Science*, 1851, vol. xiii (vol. iv of third series), p. 1.

By Dr. Thomas Stewart Traill.

A child, æt. 3, chewed some *Arsenite of Copper*. He had severe pains in abdomen, and vomited repeatedly. Vomiting returned at intervals with much severity, and the pain was violent. Pulse became feeble, extremities cold, and face livid. In about three hours the vomiting had somewhat abated; skin recovering its heat; pain in bowels still acute. Next day, after treatment, was convalescent. On 3rd day passed by stool some of the arsenical paper, and for a few days more did not take his food with his usual relish.

4. *American Journal of Medical Sciences*, New Series, 1846, vol. xi, p. 252.

M. Blandet's paper on *Scheele's green* from *Encyclop. des Sciences Médicales*.

It causes colics, prostration of strength, and headaches (these are common). The external application causes pustular eruptions on the skin, catarrh, and a painful swelling of scrotum; preceded by a puffiness of the countenance. This last is peculiar to this kind of poisoning. The internal inhalation causes bloody stools, vomitings, cramps, and delirium.

5. *Monthly Retrospect of Medical Sciences*, edited by Drs. Day, Fleming, Gairdner, 1849, vol ii, p. 22.

Report by Dr. Basedow on the effects of emanations from houses painted with *Scheele's green*; translated from Caspar's *Wochenschrift*, 27-29, 1848, in *Schmidt's Jahrbucher* No. 9, 1848.

Reference is made to an essay by Basedow in 1846, and to another paper in 1847. Physicians were invited to send in reports, and Dr. Schmidt, of Rosola, reports the following. Pseudo-rheumatic pains which come on and go without any other rheumatic phenomena and without regular crises, and are not removed by any well-established means; on the contrary, more frequently, even when the source of mischief is removed, they leave permanent impairment of the general health. The most common symptoms are flying neuralgic pains in head, throat, and breast; faintness, hoarseness, dry cough, general lassitude, and emaciation; paralytic states of individual organs, especially weak sight, and particularly marked eruptions. In such pseudo-rheumatic affections in adults the urine is always superabundant, pale, and watery, as in hysterical attacks. In children where dyspepsia commonly occurs the stools are sometimes fluid, sometimes very costive, and always deficient in bile. In older children the complaints which they make of various sorts of pains, especially in the legs, appear to depend on spinal irritation. They are capricious and in the intervals often placid; and when they are exposed to the vapours for years, they acquire remarkably old features. In chronic cases there is always an irritable state of mind.

6. *Medical Times*, 1849, vol. xix, p. 507

By Dr. F. A. Bulley.

Poisoning by *Arsenite of Copper*.

Two children, a girl *æt.* 4, and a boy *æt.* 2½, were suddenly seized in the morning with violent sickness and vomiting of a light green substance like bile diluted with water. The second time they vomited the mother observed among that ejected fluid some hard particles which proved to be portions of an ornament containing *Arsenite of Copper* which they had eaten in the morning. They both continued vomiting the same green fluid every ten or fifteen minutes during the day, until what they brought up appeared to be clear bile, mixed with the copious draughts of water which they had taken in consequence of their intense thirst, as during the whole time they were constantly asking for drink. About noon they complained of pains in bowels, followed by copious but natural stools, after which the pains abated. About 4 p.m. each had a dose of *Caster oil*, which was almost at once rejected. About 5 p.m. *Ipecac.* was given with draughts of tepid water. This increased the vomiting for a time, the same bilious fluid being more copiously ejected. The hydrated *Peroxide of Iron* was given, after which they were sick a few times. For some time prior to this period the feet and legs of both were gradually becoming cold, the pulse faltering at the wrists, faces deathly pale. Hot water bottles were applied to the feet, and they were wrapped up in blankets; shortly after this they sank into a quiet and easy sleep, the vomiting having entirely ceased. They suffered much from thirst the following night, with slight flushings of the face, but next morning they seemed well, except that the girl complained of a headache, and the boy had a trifling reactive fever.

Reference is also made to some cases quoted in Taylor's work on *Poisons*.

7. *London Medical Gazette*, 1849. New Series, vol. viii, p. 804.

By Dr. Walter Fergus.

Poisoning by *Arsenite of Copper*.

About 1 p.m. a child *æt.* 5 was taken violently sick and vomited several times; he was also purged, having two stools in half an hour. I saw him about half an hour after he had been seized; he was pale and anxious, extremities very cold, lips of a bluish tinge, pulse extremely feeble and rapid. His sister aged 7,

and a younger brother, were at dinner at this time, but did not eat with their usual appetite; shortly afterwards they were attacked with vomiting. The vomiting continued in the two elder children, and the prostration of the boy was extreme; he remained cold and drowsy till 9 p.m., vomiting at intervals. He was then put into a warm bath, which restored warmth, after which he went to sleep and woke considerably better. Thirst was an urgent and distressing symptom in all the patients. In the morning they were much better, and recovered.

8. *British and Foreign Medical Review*, 1844, vol. xviii, pp. 549—52.

Three cases of poisoning by *Scheele's green*, reported by Dr. Taylor.

They suffered from violent vomiting, severe pains in stomach and bowels, and spasms in extremities. Three animals which ate the vomited matters had similar symptoms.

9. *American Journal of Medical Sciences*. New Series, 1844, vol. viii, pp. 261-3.

Poisoning by *Arsenite of Copper*, observed by Dr. Lewensten, of Berlin, referred to.

10. *Lancet*, 1827 (vol. xii), p. 501.

Poisoning case treated at St. Thomas's Hospital.

A woman, æt. 50, ate some *Arsenic*. In one hour and a half to two hours she was admitted with excessive prostration, expression of agony in the countenance, skin cold; lips livid; pulse almost imperceptible. Constant thirst; abdomen is exquisitely painful, that the slightest pressure could not be borne. Death in two hours after her admission.

Post-mortem.—Inner surface of stomach had several florid patches, especially at cardiac portion, evidently owing to ecchymosis, from a rupture of the vessels beneath the mucous membrane. No gangrenous spots; intestines much corrugated.

11. *Lancet*, 1828-9, vol. ii, p. 612.

By Dr. Thomas Wright.

Mrs. K— took an ounce of *White Arsenic*. She had little or no

pain for half an hour or more; vomiting was then produced by *Sulphate of Zinc*, &c. In an hour the poison reproduced vomiting for half an hour, to the extent of the greatest exhaustion, which was succeeded by a cessation of all the symptoms. She was now perfectly free from all pain, even on pressure; rather drowsy; answering all questions, though not freely, quite collectedly. Sat up in bed on being pressed to do so, and drank out of a vessel which she took into her hand; not thirsty; no fœtor of breath; pulse very feeble and rapid, could not be counted; surface bedewed with a cold clammy sweat; said she felt exceedingly weak, and begged to be let alone, as she wanted to sleep. In a very short time expressed a wish, from increasing weakness, to drink "something warming to the stomach;" peppermint water was given, and she fell into a sound sleep, and died four hours after the poison.

Post-mortem, after forty-one hours. Limbs rigid; skin of upper surface (as the body lay) sallow, under surface livid. Stomach—two spots of the peritoneal coat more coloured than the rest; a very few capillary vessels minutely injected; the same appearances on intestines. Heart—right ventricle extraordinarily flabby and soft, quite empty; left ventricle rather firm, perfectly fluid blood in it. Stomach, internally (examined next morning), contained about three pints of reddish fluid; pyloric orifice had two very small vascular spots and a minute ecchymosis; at the spots was a perceptible blush, and no more.

12. *Lancet*, 1829-80, vol. i, p. 195.

Poisoning case treated at Guy's Hospital.

A boy, æt. 14, ate some *Arsenic*. In a few hours he had pain in bowels; he vomited a little; bowels rather tympanitic. An emetic brought up a membranous substance, supposed to be a piece of the mucous membrane of the stomach; bowels confined. Died twenty-five hours after the poison.

Post-mortem.—Peritoneum on stomach, bowels and bladder inflamed; mucous membrane of stomach inflamed; towards pylorus rather softened and covered with a false membrane; small intestines contained a gelatinous substance; the solitary glands remarkably distinct; mucous membrane of bladder inflamed.

13. *Lancet*, 1831-2, vol. ii, p. 132-3.

By Dr. John Elliotson.

The local effects of *Arsenic* are—heat in region of stomach, sensation of burning and smarting there, tenderness on pressure, with nausea and sometimes vomiting. It causes gastritis and inflammation of the eyes, which become red and filled with water. It causes in many persons great heat, and possibly inflammation, of the throat, uvula, and soft palate. It will cause heat and redness of fingers. It causes œdema of various parts; in one case the legs were swollen, or one arm, or the face; the face particularly is disposed to swell.

Case of poisoning.—A whole family, of eight or more, were seized with nausea and vomiting, and every one had watery eyes. None had a pulse under 120, and in some it was 160. Tongues were red and foul. They had thirst, a feeling of heat of stomach, and general heat of body. All recovered, but after they appeared well they had pains in the limbs.

The cause was *Arsenite of Copper* in and about the house, to which the water had access, so that *Arseniuretted Hydrogen* was formed.

14. *Lancet*, 1833-4, vol. i, p. 670.

By Dr. Venables.

A woman, æt. 19 or 20, took some *Arsenic*. During the night she had violent vomiting, and tenderness on pressing on epigastrium. Died in twenty-eight hours.

15. *Lancet*, 1834-5, vol. i, p. 812.

By Dr. Greening.

Jan. 27th.—Mrs. —, aged 38, had taken two drachms of *Arsenic*. I found her in bed (7 p.m.), her head supported, and saliva flowing copiously from her mouth. She had vomited nearly a chamber-pot full of fluid. Face swollen, flushed, and covered with cold sweat; pulse 120, feeble, irregular; breathing very difficult; spasmodic contraction of œsophagus; the retching and vomiting nearly approached to convulsions. Gave soap and water and used stomach-pump. At 9 p.m. was more sensible, and complained of excruciating pains and burning sensation in throat and stomach. 10 p.m., still severe pain over abdomen, which is much swollen; vomiting still. *Magnesia*.

Jan 28th, 7 a.m.—More composed, but says she shall die. Vomiting throughout the night; pulse 95, small; great thirst; bowels have been moved four times, with excruciating pain and tenderness in epigastric region; *bleeding*, *Opium*, *blister* to stomach, and *Magnesia*. 1 p.m., feels somewhat easier; *bleeding* again ordered and *purgative enema*. 10 p.m., bowels open; less pain; animal spirits much depressed; still vomits; pulse 98; blood buffed; thirst; *Magnesia*.

29th, 9 a.m.—Some sleep; still burning of throat and stomach; still vomiting; *bleeding* again, *Opium*, and *enema*.

February 1st.—No vomiting since yesterday afternoon. Great pain in bowels and great thirst. Repeat *blister* and *mixture*.

2nd.—Bowels open; a large quantity of mucus mixed with feces. Pulse 108, soft, and quick.

23rd.—Well.

16. *Lancet*, 1835-6, vol. i, p. 436.

Case by Dr. Elliotson.

A girl, æt. 22, swallowed an ounce of *Arsenic*. In ten minutes she became very sick. During the night there was much burning pain in stomach, but next morning was nearly free from pain. Next morning it appeared that she had had much burning pain in night, for which she was bled. She had some pain in stomach and bowels, and slight tenderness. She says her legs and arms feel as if something were gnawing them; more tenderness at the large end of stomach than at any other part of abdomen. Tongue much furred; pulse 100, and weak; no appetite. Recovered.

17. *Lancet*, 1837-8, vol. i, p. 400.

Dr. Sigmond's lectures.

Roux states that a girl applied arsenical paste to a cancerous breast; next day vomiting and violent colic occurred, and she died in two days.

Sir Astley Cooper mentions a case where fatal inflammation of stomach occurred from the application to a fungus of the eye. *Arsenic* causes pain in stomach, disordered state of bowels, œdematous swelling of face, hands, and feet, and inflamed eyes. If continued, it causes paralysis of lower limbs; blotches on surface of body which have a great tendency to become gangrenous. Dr. Walt was exposed in a closed chamber to the

vapour of six grains of *Arsenious acid*. The following night, after two hours' sleep, he woke with a dreadful sense of constriction of larynx, extreme anxiety, and cephalalgia; he then allowed the vapour to escape; again went to rest very much fatigued, and the following day had only headache.

18. *Lancet*, 1839-40, vol. ii, p. 275 (misprinted in "Index" 274).

Case by Orfila in *Archives Générales de Médecine*.

April, 1840. No symptoms here given.

19. *Lancet*, 1836-7, vol. ii, p. 901.

In *Comment. de Rebus*, Leipzig, 1793, tom. xxxv, and from *Metzger*, p. 390, we find the case of two women.

"Quibus per vaginam oxidum arsenici marito admotum est. Occubnere ambæ; harum una inopinato et perdurante horrore et urente vaginæ dolore correpta est, et post vomitus fere continuos et deliria, elapsis 28 horis ab applicatione veneni, mortua est. Sectio monstravit abdomen non tumidum, nullas in cute maculas, labia vulvæ magna paulum tumida et rubra; in vagina, patula flaccida pauce grana arsenici crystallini."

20. *Lancet*, 1836-7, vol. ii, pp. 449 and 497.

Lectures by Dr. A. T. Thomson.

References to Jager in his work *De Effectibus Arsenici*.

In a large dose the first effects are sickness and fainting; sometimes a pricking and burning sensation in the throat. In the case of Mr. Blandy, a burning in gullet followed each dose of poison. The next symptoms are, burning at stomach with extreme tenderness on pressure; vomiting and retching worse or excited by taking fluids. Often there is a sensation of dryness and constriction of the throat; great thirst; tightness of the skin of face and neck, and voice hoarse. The vomit is generally greenish or yellowish, sometimes streaked with blood. The burning as it increases extends all over abdomen.

Diarrhœa follows, but not always. Sometimes there is tenesmus without diarrhœa; the belly is occasionally drawn inwards at the navel; sometimes swollen or distended. When the purging is severe the anus is excoriated; cramps and convulsions supervene, and extend from the trunk to the extremi-

ties. The chest is often affected; the breathing becomes laborious, and occasionally there is palpitation of the heart. Pulse generally small, rapid, and feeble, sometimes slow. Skin cold and clammy, extremities livid. Painful micturition; often excoriations of the *labia pudendi*, sometimes total suppression of urine, sometimes *ardor urinæ*. By degrees the face becomes very anxious. Eyes red; delirium follows, with stupor and death.

Unwin's and Roget's cases referred to (see below).

Case by Professor Chaussier from *Archives Générales de Médecine*, vol. vii, p. 14.

A man swallowed a large quantity of *Arsenious Acid*, and died in a few hours. Great debility and tendency to fainting were almost the only symptoms.

Case by M. Laborde (? in *Journal de Médecine*, vol. lxxv, p. 89).

A young woman swallowed some *Arsenious Acid*. Drinking caused vomiting, but without much uneasiness; in two hours her face was anxious, but she was tranquil; she gradually became drowsy, then remained calm for four or five hours; finally, on trying to sit up, complained of pain in stomach, and expired without a groan.

Case from *Ephemerides Curiosorum Naturæ*.

A solution of *Arsenic* was applied to the mucous membrane of nostrils; it caused profuse discharge from nostrils, followed by stupor approaching coma, weakness of sight, and defective memory after the sensibility returned. The person lingered in bad health for two years, fell into convulsions, and died.

Reference made to *Edin. Med. and Chir. Trans.* and *London Med. and Physical Journal*, also to *Archives de Médecine*, vol. vii, to *Morgagni*, and to *Journal de Médecine*, vol. lxx.

In other cases convulsions, like tetanus, hysteria, or epilepsy supervene. In two of those persons who suffered in Eliza Fenning's case one had epilepsy the first day; in the other the fits did not come on till the night after the first day, but they continued for fifteen days, recurring at the same hour, and after an intermission of eight days they again returned, and appeared frequently for many months.

Reference to *Edinb. Journal*, vol. xv (see below).

Palsy sometimes occurs, not unfrequently of a local kind; sometimes the hands, at others the whole arms, are affected; sometimes clonic contractions of the limbs take place. *Mania* has

occurred when there is an hereditary predisposition to it. In some cases there follow dyspepsia and emaciation.

Post-mortem appearances.—Occasionally livid spots on skin ; in more than one instance a very offensive odour from body. Tongue inflamed and thickened ; pharynx red and inflamed, and mucous membrane separated with ease. Sometimes ulceration of stomach, and a black fluid is found in the serous cavity. When there is no ulceration the stomach displays a deep red hue externally, while the villous coat is a bright red ; and a brown, semi-opaque, thick fluid is found in its cavity.

Pyloric orifice sometimes gangrenous. Duodenum is sometimes dark purple, pulpy, and thickened ; the internal coat easily separated and of a dark colour, sometimes eroded and perforated with holes having a ragged edge. Jejunum and ileum red in spots from inflammation. Lungs sometimes livid and inflated. Heart sometimes variegated with purple spots. Liver and spleen often gorged, and the former occasionally grey. Bladder almost always greatly contracted. Choroid plexus usually much injected.

Experiments.—Three grains of *Arsenious Acid* and six of *Sub-carbonate of Magnesia* were given to a rabbit ; it was almost immediately convulsed, and died in one minute. Stomach was slightly inflamed only at and near the cardiac portion.

A similar dose was given to another rabbit ; in less than three quarters of an hour it became violently convulsed, uttered several piercing cries, and died. The stomach presented marks of high inflammation as high as the pyloric portion, where the redness suddenly terminated.

Extract from a case by Dr. Macleod, of North Uist, given. (See below).

21. *Lancet*, 1842-3, vol. i, p. 142.

Experiments on horses made in Paris. No symptoms given.

22. *Lancet*, 1842-3, vol. ii, p. 333.

Case from *Gazette des Hôpitaux* of poisoning by applying cerate containing *Arsenic* to blisters on the arms. The next day he was restless ; arms inflamed and painful ; tongue red and dry ; thirst intense ; pulse small, irregular, and frequent ; headache ; gripings ; involuntary contraction of the muscles of legs and back ; followed

by death. Similar symptoms, but not fatal, also occurred in a little girl who used the same cerate.

23. *Lancet*, 1840-1, vol. i, p. 882.

By Dr. M. D. Thompson.

Feb. 16th, 8.30 a.m.—Visited a lad, aged 18. He was cold, pulseless, restless, and complaining of cramp in upper and lower extremities; countenance sunken; anterior part of neck and chest livid; tongue nearly natural; abdomen seemed fuller than usual, but not tender on pressure. He had been attacked with vomiting and purging about 2 a.m.; the matter passed by stool was said to have been of a dark colour; the vomit was a dark green, thin fluid. In an hour and a half he was much worse, and died.

Post-mortem.—The integuments of neck and anterior part of chest, the arms as far as elbow, the lateral parts of chest bounded by the cartilages of false ribs, the whole of the back part of the body as far as the knees, except the *nates*, and opposite to dorsum of scapulæ, were copper-coloured. The colour was not in elevated spots, like secondary syphilis, but was diffused without any apparent elevation over the whole surface of the parts alluded to. The sinuses, membranes, vessels of brain, and brain itself, were gorged with black blood, generally coagulated. The brain itself was so much engorged that, when the upper part of each hemisphere was removed by a scalpel and the cineritious and medullary parts exposed, the medullary parts presented a spotted surface as if sprinkled over with black ink. The spots, on being removed with the blade of a scalpel, quickly returned. Lungs much engorged with black blood; inferior lobe of right lung completely consolidated. Stomach and small intestines contained a thin dark green fluid, the cæcum and the ascending and transverse parts of arch of colon a fluid like thick gruel. A bright redness, deeper in some parts than others, of the whole of the villous coat of the stomach, duodenum, and rectum. *Arsenic* was detected in the body.

24. *Lancet*, 1840-1, vol. ii, p. 305.

By Dr. Michael Foster.

A woman, æt. 37, took *White Arsenic*, and gave it to her two children, aged 2½ years and 5 months. It was taken between

9.30 a.m. and 11 a.m. The woman when seen shortly after 11 a.m. was sensible and confessed her crime; she was vomiting violently, and complained of a burning sensation in stomach-pit; constant tenesmus with mucous stools; pulse small and rapid; violent delirium soon followed by tetanic convulsions, requiring the utmost exertion of four persons to hold her in bed; conjunctiva intensely injected; pupils first minutely contracted, then exceedingly dilated; eyes fixed upwards; mouth drawn in all directions. This state lasted some minutes; calmness and repose followed, in which she died not more than three and a half hours after taking the poison.

Post-mortem.—Stomach, small intestines, and bladder on their peritoneal surface exhibited much inflammatory vascularity. Stomach contained a pint of thin glairy yellowish fluid; villous coat was in every part red and inflamed. Heart healthy; much dark blood on right side of it.

The elder child when seen was comatose. She had been sick and convulsed, and had had severe pain; now there was complete insensibility; face swollen and livid; pupils dilated; breathing difficult; extremities cold. She died not more than two hours after the poison.

Post-mortem.—Stomach contained 3 or 4 oz. of fluid; villous coat of a vermilion colour.

The infant was found after three hours in great agony, with severe bilious vomitings and convulsions; extremities cold, the lower ones retracted to the abdomen, which was swollen and tense; countenance pale, and pulse imperceptible. Died in six and a half hours after the poison.

Post-mortem.—The same as in the two preceding cases, except that the villous coat of stomach was in the highest state of inflammation, and in the greater part of its extent the redness was of the brightest scarlet colour; in patches there was an effusion of dark blood.

25. *Lancet*, 1838-9, vol. i, p. 54.

By Dr. John Murray, from *Calcutta Quarterly Journal*, December, 1837.

A man, æt. 22, was admitted on May 19th, at 11 a.m., with violent vomiting, and excessively acute pain on pressure over epigastrium. He had taken 15 grains of *White Arsenic* at 9 a.m.,

and at 10 a.m. commenced vomiting with purging; very much depressed; pulse 100, weak. Was bled and took *Antimony*.

1 p.m.—Pain in epigastrium excessively acute, extending more over the abdomen; several attempts at vomiting, and some tenesmus. Took *Tritoxide of Iron*.

4 p.m.—Pain more diffused; has retched several times. Repeat *Iron*.

7 p.m.—Pain much better; no vomiting; pulse 64; skin cold. Repeat *Iron* and take *Castor oil*.

11 p.m.—One copious stool; pain in abdomen more acute on pressure; slight cramps in legs; very low; pulse 48; skin cold. Repeat *Iron*; purgative enema, and blister to abdomen.

20th.—Slept a little; one dark brown stool; no vomiting; pain in abdomen better; thirsty; pulse 80; tongue furred; skin warm. *Castor oil* and effervescing draught.

Evening.—Four copious black liquid stools with slight tenesmus; slight pain in abdomen; pulse 80; tongue furred; skin cool; weak.

21st.—Slept pretty well; no stool; still tenderness on pressure over descending colon and in epigastrium; pulse 80, soft; tongue clean; skin cool. Repeat medicines.

22nd.—Four black stools.

24th.—Well.

26. *Lancet*, 1838-9, vol. i, p. 103.

By Dr. Rayner.

A girl took *Arsenic*. She was attacked with incessant vomiting, intense thirst, sensation of heat in throat and stomach, faintness, desire for stool. She continued thus for nearly twelve hours, when she died. During the day she drank several quarts of cold water.

27. *Lancet*, 1838-9, vol. i, p. 176.

By Dr. A. T. Thomson.

Experiments with *Iodide of Arsenic*.

At first appetite is increased, but after taking it for ten or twelve days pain is felt at epigastrium, with thirst, dry state of throat, slight fever, and sometimes diarrhoea and tenesmus; the skin also becomes dry, and the urine is increased in quantity. If it is continued the nervous system becomes extremely irritable, and wake-

fulness supervenes. It does not cause salivation as the *Arsenious acid* does.

Experiments on dogs :

(1.) One drachm dissolved in 4 oz. of water was given to a dog, and œsophagus tied. In five minutes it became sick and œsophagus burst.

(2.) The same dose given in the same manner. Symptoms of sickness in four minutes, followed by severe and almost unremitting efforts to vomit. The pain at stomach was evidently great, as the animal frequently pressed the abdomen on the floor, then hastily rose, and rapidly passed from one place to another as if seeking relief. The increased secretion of saliva, which was extremely viscid and difficult to be removed from the mouth, greatly annoyed the animal. In twelve minutes it had a fluid stool, chiefly of mucus; this was followed by another, which seemed to afford momentary relief; with the second a tapeworm was ejected. The heart was beating very irregularly; pulse extremely rapid and sharp; spasmodic twitching of the extremities. The efforts at vomiting, which had ceased for a few minutes, recommenced with increased severity, accompanied in the intervals with general tremor and an evident failure of muscular power in the limbs. In twenty minutes it fell on its side; as it lay the *left* fore leg and *right* hind leg were affected with continual twitchings, whilst the other two limbs remained at rest. In thirty-seven minutes the other legs were affected in the same manner; the muscles of the lower jaw were also convulsed. In five minutes more the convulsive twitchings became general, and the breathing was much embarrassed. Respirations were strong, deep, convulsive, and only twenty in a minute. In forty minutes its moanings indicated increased suffering; the intercostal muscles were spasmodically affected, whilst the general twitching continued. In one hour emprosthotonos supervened; the respirations were deeper and at longer intervals than before; the twitchings as before. The opposite legs, which had been first affected by the twitchings, now became paralysed, whilst the others continued in spasmodic motion. The sensibility was unimpaired; on pinching the ear it gave a cry, and the eyes closed when the fingers approached them. In eighty minutes the violence of the pain forced it upon its legs, but it instantly fell and never rose again. In eighty-two minutes the *right* hind leg became paralysed, but the *left* fore leg continued

twitching; the dog was still sensitive. In one and three-quarter hours all sensibility was lost except at the muzzle. In two hours it was still alive, though insensible. In two and a half hours it died.

Post-mortem.—The lining membrane of the œsophagus and stomach displayed a deep red colour, the result of strong inflammatory action; in the stomach the mucous coat was softened throughout, and thinned almost to the peritoneal coat in the cardiac portion. This thinning was not the result of ulceration, but seemed to have been produced by a change of the tissue, and its conversion into a gelatinized substance. The veins of the peritoneal covering of the stomach were excessively turgid, but this coat was not *decidedly* inflamed. The duodenum participated in the inflammatory state of the stomach, and in a diminished degree the redness extended through the whole length of the jejunum and ileum; the rectum also was particularly inflamed, and ecchymosed patches were dispersed over it, whilst the ridges of all the rugæ were of a deep red. Both sides of heart were turgid with *coagulated* blood; lungs were collapsed, but bore no traces of inflammation; they did not crepitate. Mucous membrane of trachea slightly inflamed. Vessels of brain and spinal cord more than usually turgid.

(3.) This experiment was similar to the former; similar results followed, only death was not so rapid.

(4.) Four grains of the *iodide* were given to a dog, but without tying the œsophagus. In four minutes he vomited a white frothy matter; the vomiting was repeated at intervals of a few minutes five times successively, after which it lapped some water, and then lay down and slept. Next morning well.

Eight grains were now given. It vomited in thirty minutes, and it was only once repeated. Next morning well.

Twelve grains were given next day with the same result as with 8 grains.

Next morning 20 grains were given. Vomiting occurred in two minutes, and was more often repeated than in the former experiments, otherwise the effect was similar. In two days more a scruple was given and the œsophagus tied. The symptoms were nearly the same as in the second experiment, but less violent, and the animal died during the following night.

Post-mortem.—Stomach less red than in the second experiment,

but more extensively softened, and ulcerated in several places. Upon two spots a quantity of coagulable lymph was deposited, and adhered firmly to the coat beneath it. The vessels on the peritoneal covering were much injected. The inflammation was not considerable in the duodenum, and became less and less until it disappeared in the small intestines. In the portion of the ileum approaching the *caput coli* streaks of red again displayed themselves; these increased in the rectum, upon the summits of the rugæ of which were many ecchymosed spots. The lungs, heart, liver, spleen, and brain presented the same appearances as in the second experiment.

(5.) Half a drachm of *iodide* in 4 oz. of water was injected into the abdomen of a bitch. In ten minutes vomiting came on, and was repeated three times in two minutes, when it fell on its side; the breathing suddenly stopped, and in half a minute more the heart stopped; a few seconds before death violent spasmodic twitchings affected the back.

Post-mortem.—Peritoneum highly inflamed; neither the peristaltic nor vermicular motion of intestines evident; lungs greatly congested and red; right side of heart turgid with blood; left nearly empty.

(6.) Half a drachm of the *iodide* in 4 oz. of water was injected into the right side of thorax of a dog. In five minutes the animal fell on its side, and displayed violent tetanic convulsions; breathing extremely slow, and altogether abdominal. In ten minutes, heart's action still slower and intermittent; in eleven minutes the fore-legs were affected with violent movements, and the whole body suffered under tetanic spasms; in fifteen minutes, death.

Post-mortem.—Lungs collapsed; no crepitation; whitish brown. Diaphragm could not be excited by pinching or irritating the phrenic nerves. The heart was turgid with blood on both sides; it was completely insensible to stimuli, either mechanical or chemical; but the fibres of the system exhibited a tremulous movement which lasted ten minutes. Right pleura slightly reddened; left natural. Stomach much thickened and inflamed; traces of inflammation in duodenum.

(7.) Two scruples of the *iodide* were inserted into a wound made in the back of a dog. It caused great pain in the wound at once. In fifteen minutes, much frothy saliva flowed from the mouth. In forty-three minutes, twitchings of the skin supervened, and the

action of the heart became too rapid to be counted. In seventy-six minutes the animal became dull, laying the head on the ground, and was affected with general tremors. In eighty-six minutes the tremors continued, and he remained in a stupid condition. In three and a half hours an opaque dirty white discharge exuded from the wound. He died in the night.

Post-mortem.—Traces of inflammation in rectum. Vessels of brain more than usually turgid.

(8.) Two doses of five grains each were injected without effect into the jugular vein of a dog; fifteen grains stopped heart's action in twenty seconds.

Post-mortem.—Irritability of heart quite destroyed.

28. *Lancet*, 1838-9, vol. i, p. 230.

By Dr. Joseph Thomson.

Poisoning by *Oxide of Arsenic*.

Post-mortem.—(The hypertrophy of heart, and softening of thalami and corpora striata were supposed to have previously existed.) Sinuses of brain full of black blood; slight serous effusion into cavity of arachnoid and lateral ventricles, and a little also under the arachnoid, and at the upper part of posterior lobes of the cerebrum near the longitudinal fissures; this was more fibrinous in its character, and stationary, presenting an opaque appearance. The *pia mater* was so much congested that when separated from the brain and spread out it looked like a red membranous sheet. In some places the vessels had given way so as to form spots of extravasation; but these were not numerous, and were situated at the inferior surface of the posterior lobes of the cerebrum.

On making a section of the brain numerous large dark bloody points were perceived; the difference in colour between the cortical and medullary portions of the brain was very marked; the *thalami* and *corpora striata* were rather softer than natural; the *vena Galeni* were distended with blood, as were also the arteries forming the circle of Willis; the cerebellum on being incised showed many bloody points; the *plexus choroides* was not so vascular as might have been expected from the state of the *pia mater*. Lungs extremely gorged with blood, particularly at the posterior thick border; the right adhered throughout its whole extent (except at the anterior border) to the parietes of the chest by an old adhesion,

in which towards the posterior border of the lungs there was found a calcareous concretion as large as a small nut ; on separating the lung from the ribs, where the adhesion existed, it was accidentally torn, when much dark blood of a gelatinous consistence escaped from its textures. This shows the degree of pulmonary engorgement, which was quite as great on the left side, where there was not any adhesion.

The heart was hypertrophied, particularly the left side, which was full of dark scarcely coagulated blood, as was the aorta ; the pulmonic cavities of the heart and the venæ cavæ were also filled with dark blood, and the auriculo-ventricular opening on this side was considerably dilated. Stomach was much distended, and contained about two pints of a brownish-red fluid, with large portions of viscid mucus entangling a quantity of white powder ; some portions of mucus containing a similar powder adhered to the mucous membrane. The stomach was large and thick, which latter alteration seemed chiefly owing to the injected condition of the mucous membrane, for its vascularity was so great as to give it an uniform red appearance, except at the cardiac extremity opposite the great curvature, where there was a little portion of a bluish slaty colour, and a little to the right of this a good many small dark spots of extravasation, seated chiefly on the rugæ, giving the stomach at this part a mottled appearance ; the mucous membrane was rather more easily separated than usual ; the mucous membrane of duodenum was very vascular and contained a reddish fluid. The veins of mesentery were tinged with dark blood, and likewise those proceeding from the abdominal viscera generally. The probable amount of poison taken was half an ounce.

29. *Lancet*, 1838-9, vol. i, p. 324.

Case translated from the French of M. Deville, as read before the *Société Médicale de Paris*, by Dr. T. H. Burgess.

A young lady, æt. 19, took some *Arsenic* about midnight. At 1 a.m. there were several attempts at vomiting, and a feeling of burning heat in throat and region of stomach. Presently the violent pain excited cries. At 3 a.m. the pains in the epigastric region were not bearable ; face red, swollen ; cramps in calves. By 4 a.m. she had vomited three or four times. The pains in frontal region became now more intense, and were accompanied with vertigo ; the face was extremely red ; the eyes were greatly

swollen and shedding tears; she felt an excruciating heat and oppression in throat, as if burning and suffocating. Pulse strong, full, and bounding; excessive pain in stomach, forehead, and temples. Five and a half hours after the poison, about an ounce of *Tritoxide of Iron* was given, and continued every fifteen minutes till 8 a.m. It was then stopped, as it had caused several vomitings and two stools, and because the symptoms of poisoning were decreasing. She was from time to time attacked with such violent cramps, particularly in left leg, that it was necessary to hold her down to prevent her from throwing herself from the bed.

The pulse was full and bounding; the pains in epigastric region varied, at one time almost disappearing, and the next moment becoming insupportable. During the following and several succeeding days the fever persisted with most violent headache, which prevented her from a single moment of repose. In eleven days she was well. It was ascertained that she had taken and retained in stomach 56 grains of *Arsenious acid*. The poison she took was mixed with *Sulphate of Barium* in the proportions of 84 of *Arsenious acid* to 16 of the latter.

The researches of M. Lachese, junior, referred to.

30. *Lancet*, 1839-40, vol. i, p. 416.

By Dr. John Burne.

A young woman took some *Arsenious acid* for menorrhagia. Symptoms of inflammation of stomach came on, which after subsiding to some degree, recurred twice. On one occasion there was also delirium, palsied shaking of head, swimming of the eyes, and dangerous debility and exhaustion.

Dr. Addison said he had seen two cases of gastritis from the external application of arsenic.

31. *Lancet*, 1839-40, vol. i, p. 706.

Case by Dr. Robert Williams.

A woman, aged between 20 and 30, was admitted to St. Thomas's Hospital at midnight, January 17th, having taken a pennyworth of *White Arsenic*. In about two hours she had nausea, faintness, great thirst, considerable pain and burning heat in epigastric region, heat and dryness of fauces, and constant desire to swallow saliva. Took an emetic of *Antimonial wine*. Vomiting came on; the pain increased; voice became very hoarse, and on admission the pulse was

130, and small. Stomach pump was used, and olive oil and mucilage of acacia taken in the intervals of vomiting, which began to recur about every hour.

18th.—Morning; no great change, except more tenderness of abdomen. Breathing rather hurried; pulse 120, small; no stool. Took *Castor oil*, and sinapism to abdomen. Effervescing draughts. In evening, there was considerable distress from the vomiting, and *Hydrocyanic acid* was given.

19th.—Vomiting relieved; tenderness of abdomen more diffused, but less acute; breathing almost entirely carried on by diaphragm and thoracic muscles; could not take a deep inspiration without pain; obscure crepitation at lower parts of both lungs; pulse 130, contracted and very small; tongue red and dry at tip and edges, moister in centre, and coated with a light fur; bowels open, stools foetid and dark; urine scanty. Continued *Hydrocyanic acid*, and applied blister to epigastrium.

20th.—Pain, tenderness, and vomiting, less urgent; pulse almost imperceptible; fluttering and irregular action of heart; tongue moister; less thirst; bowels open; breathing easier.

To take syrup of *White Poppies*.

21st.—Towards night extremities became cold; surface of body covered with clammy sweat; face livid, countenance anxious. Some irritation about urinary organs, and a good deal at anus. Action of heart became irregular, breathing difficult; pulse imperceptible, and she died next morning.

Post-mortem in eight hours.—Body very fat and still warm, and on being opened exhaled a most peculiarly offensive and sickening odour. Small quantity of serum in cavity of arachnoid. Some congestion of the vessels of *pia mater* and effusion into its cells. Heart healthy, except slight induration of mitral valve. No fluid in pericardium. Lungs heavy and dark; on section the cut surface appeared bright red, glossy and smooth; it resembled neither the granular appearance of pneumonic hepatization, nor the defined homogeneous structure of the clot in pulmonary apoplexy. It was perhaps the first stage of pneumonia, the appearance being produced by extensive engorgement or congestion of the pulmonary capillaries, no effusion having as yet taken place. There was evidently no *post-mortem* change, from the fresh state of the body, and as the change in the lung was uniform or nearly so. The shape of the lower lobe of left lung was altered, the surface being rendered irregular from the contraction of a large cicatrix in the substance of

the lobe. The mucous membrane of larynx and trachea was intensely red. Stomach appeared distended and white. It contained nearly a pint of dirty greenish matter. Mucous membrane somewhat softened, separating a little more readily than usual from the other coats. There was a good deal of dark vascular arborescence, principally confined to the lesser curvature. A small patch of ulceration near the cardiac extremity was covered by some extravasated blood. The mucous membrane of the great curvature was raised for a considerable extent by the presence of air in the submucous tissue. The small intestines contained a good deal of feculent matter. Their mucous membrane throughout was unusually vascular, and covered in places by a viscid mucus. There were evidences both of former and recent peritonitis, in some slight effusion and vascularity, and in old adhesions. Liver enlarged, and presented a very singular and uniform structural change. It was softened and rendered of a yellow-fatty colour throughout its whole extent; it did not, however, resemble fatty degeneration; it was more like the cortical substance of the kidney in an advanced stage of Bright's disease. Both kidneys were diseased; the cortical substance thickened and very pale; on tearing off the peritoneal coat, the surface appeared granular and softened. A large number of cysts in one of the Fallopian tubes.

[The patient was a woman of bad character, and some of these *post-mortem* appearances may have been due to intemperance. —E. W. B.].

32. *Lancet*, 1842-3, vol. ii, p. 819.

By Erasmus Wilson.

Dr. Thomson says of the *Iodide of Arsenic*, its obvious effects are quickness and hardness of pulse, with slight puffiness of lower eyelids; heat of mouth and fauces, and anxiety of præcordia, with pains at epigastrium, or griping. Tension with uneasy stiff feeling around eyes and erythema of face, thirst, white tongue with the edges and tip of a florid red hue. Nausea, cough, vertigo, or salivation. An uneasy sensation of chest.

33. *Lancet*, 1842-3, vol. ii, p. 845-7.

By Dr. G. D. Hedley, of Bedford.

In a case of poisoning intussusception of bowels in two places occurred, as verified by *post-mortem* examination; also in another case observed by Mr. Harris, of Bedford, about the year 1842.

34. *Lancet*, 1842-3, vol ii, p. 897 [misprinted 987; this mistake was copied into my *Index*.—E. W. B.].

Case translated from *Gazette des Hôpitaux*, August 15th, 1843.

A young woman swallowed, as was supposed, about five drachms of *White Arsenic*. In two hours she had flushed face; eyes lachrymose; eyelids injected and half shut; some headache, but the intellectual faculties uninjured; thirst and disagreeable metallic taste in mouth; painful expectoration, but no constriction of throat. Had vomited twice, one vomit was said to have been liquid, colourless, and without any food; the second had been fluid and greenish. Abdomen was little sensitive to pressure; pulse rather frequent, full and quite regular; breathing easy and not quickened; no irritation or eruptions on skin, the temperature of which was somewhat exalted. *Tartar Emetic* was given, followed by vomiting of greenish liquid, and a little blood. She recovered under *Hydrated Peroxide of Iron*.

35. *Lancet*, 1844, vol. ii, p. 103.

By Samuel Argent.

A woman took half an ounce of *Arsenic* in the evening. Next day at 5 a.m. she was found violently vomiting and purging, the evacuations consisting of a watery fluid intermixed with lumps of green mucus. She had pain in stomach, heat in mouth and throat, with thirst. She had been in this state all night. She recovered.

36. *Lancet*, 1844, vol. i, p. 507.

Dr. Shipman's case copied from *American Journal of Medical Sciences*; see original below.

37. *Lancet*, 1842-3, vol ii, p. 285.

Post-mortem appearances in a woman, æt. 31, after poisoning by *Arsenious acid*.

By Dr. W. B. Herapath.

Lungs full and prominent, did not collapse on admitting air; not emphysematous; engorged with blood almost as if asphyxia had caused death; upon cutting into them it flowed out in quantities. The black pulmonary substance was deposited in its usual situation; two or three black bodies, as large as sparrow-shot, were seen in the interlobular fissures, probably enlarged lymphatic glands blackened by this substance. A small cretaceous tubercle, the size of a pea, in the base of lower left lobe.

Pericardium contained a teaspoonful of serum.

Heart large and flabby; right auricle and ventricle distended with black fluid blood; left cavities not so full; no coagula.

Pleura contained several ounces of serum.

Intestines.—Peritoneal surface of small intestines had a beautiful pink colour, similar to the hue of a maiden's blush-rose; several vessels very distinctly marked. Several bars of organised false membranes connected the small intestines with the uterus and each other; these bands were highly vascular and organised; the peritoneal disease was local, extending only to about the fifth or sixth inferior convolutions of the ileum, and was consequently found on the right side.

Stomach contained half a pint of this grumous yellowish-red fluid, some half-digested portions of food in it. The greater cul-de-sac of the mucous surface and a portion of the greater curvature had a dark livid red colour; a clot of blood was seen to have been effused upon its surface, and also beneath the mucous membrane. The rugæ were very distinctly marked, and many deeply injected and highly inflamed; its pyloric portions were scarcely affected, but the mucous follicles were enlarged, and numerous white specks were sprinkled over its surface. Upon raising the coagulum, the mucous surface was highly inflamed and much softened, being easily torn by the nail. Throughout every part of the stomach these white specks were seen, but they were numerous in the foveolæ or pits between the rugæ. Some patches of white matter were observed upon the coagulum; some were also scattered upon the surface of the lining membrane of the stomach; but a peculiar white shining apparently crystalline body was seen everywhere diffused.

Duodenum contained only a little fluid.

Jejunum contained some fluid and gas; one or two red spots upon its surface.

Liver gorged with blood.

Uterus connected to the ileum by false membranes.

Bladder empty.

Kidneys congested with blood, and the calyces contained some muco-purulent fluid, and apparently the mucous membrane was inflamed, as it was highly vascular (there was no evidence of gonorrhœa.)

Fallopian tubes both encysted, the fimbriated extremities being

adherent to the recto-uterine fold of peritoneum on the left, but to the enlarged ovary on the right. Their *ostea uterina* were obliterated; the adhesions were probably old, as they were organised. The right tube being opened, about two as three drachms of yellow serous fluid escaped; very little, scarcely a drachm, from the left. Left ovary contained several cavities; one seemed to communicate with the peritoneal cavity, as an opening was found having rounded edges and not appearing as if cut; this cavity would have lodged a pea; the internal surface was slightly yellow; all the sacs were empty and communicated; three or four were found.

On puncturing the right ovary, about two ounces of reddish serum (sero-sanguineous fluid) escaped, and a solid body with a shaggy surface was seen blocking up the orifice; this proved to be a coagulum of blood (?) homogeneous in texture, but yellowish within. The walls of this cyst were lined by a false membrane, upon the removal of which the serous shining surface of the cyst appeared. The whole ovary was as large as a tennis-ball. The walls of the ovary were $\frac{1}{8}$ inch thick, and none of the healthy structure remained. The peritoneal inflammation might have resulted from the rupture of a similar cyst in left ovary.

Her symptoms were as follow:—She was found very ill and groaning terribly; asked for water, and soon afterwards vomited a large quantity of white stringy fluid. Complained much to a medical man of her heart, and appeared in great agony, rolling and tossing in bed; she either would not or could not answer his questions.

Arsenic was found in the body.

38. *Lancet*, 1842-3, vol. ii, p. 801.

By Dr. G. D. Hedley.

October 23rd.—A man, set. 24, was seized with vomiting, pains in stomach with slight tenderness on pressure, sense of constriction in throat, feeble pulse, clean tongue. Took saline mixture.

25th.—No great change; no stool; took an aperient.

26th.—Much better. His wife gave him a pill, and a girl, 14 years old, took one also to show him how easy it was to swallow them. About an hour afterwards both he and the girl became sick, vomited, and complained of pain in chest, and constriction of the throat. The girl remained ill for some days, but recovered without medicine. The matters vomited were emptied into a

yard where a pig was kept, and the next morning the pig was dead.

27th.—The man was better, but still complained of tightness of throat, which was relieved by leeches.

29th.—Better than ever before since his illness. At 9.30 p.m. his wife gave him a white powder in water. In about an hour he again became sick, retching violently, and complaining of heat and constriction of the throat, and thirst; this continued, the man becoming weaker, and the vomiting at last bloody, till he died at 5.30 a.m. on 30th.

Post-mortem 141 days after death.—Body very little decomposed. On anterior surface of stomach, of sigmoid flexure of colon, and one or two other parts of intestines, considerable redness of a bright florid hue was observed.

Stomach contained two and a half ounces of a dark reddish-brown fluid, having some white powder mixed with it. General redness of mucous membrane, of a deeper hue towards orifices. About cardiac orifice, and extending up the œsophagus, was an apparent abrasion of mucous membrane. On slitting up œsophagus, a small quantity of fluid mixed with blood escaped; the abrasion of the mucous membrane, with redness of a deep hue, extended along its whole surface, with the white powder adhering to it at parts. In the small intestines was found a dark fluid, of greater consistence than that contained in the stomach, assuming, as it descended the bowel, the appearance of thick mucus or jelly, having the white powder mixed with it. There was a redness of the mucous membrane, of a deeper hue as it approached the cœcum and stomach, and in parts the bowel was greatly contracted. About the middle of the small intestine was a small ulcerated opening through which some of the white powder had escaped, and had been observed adhering to its peritoneal surface before the parts were disturbed. Two or three round worms were found in the lower parts of the ileum. In the large intestines the traces of inflammation were not so strongly marked.

Arsenic was detected by analysis.

39. *Lancet*, 1844, vol. ii, p. 154.

By Dr. J. J. Kelso.

A girl, æt. 8, swallowed about $\frac{1}{4}$ oz. of *White Arsenic* at 11 a.m. The first symptom was vomiting on being given some food; she

then took a considerable quantity of melted butter, which excited rather free vomiting two or three times. In an hour and a half there was marked listlessness and indisposition to answer questions; pulse about 120, weak, rather unequal, with occasional indications of fluttering; respirations not irregular, but rather slow, and imperfectly performed; feeling of sickness or nausea, with inclination every now and then to vomit. Heat and pain in throat and stomach. Pain in epigastric region increased by the application of hand, and she then became fearful, and complained of the procedure. Pupils, especially the right, remarkably affected; alternate dilations and contractions in rather rapid and extreme degree were noticed, which were increased on the presentation of a lighted candle or the tip of the forefinger motioning to and fro. Gave a teaspoonful of *Chalk* and *Magnesia* in milk every fifteen minutes.

4.30 p.m.—Much sickness at stomach and indisposition to action; had vomited two or three times rather copiously, and the exhaustion occasioned thereby was indicated by the countenance. The eyelids drooped languidly, concealing to some extent the eyeballs; the features generally were relaxed, so as to give the countenance a rather expressionless appearance; the involuntary movements of pupils had in a great measure disappeared. Pulse 130, weak and indistinct; epigastric region considerably distended and acutely painful on pressure; burning sensation in course of stomach and œsophagus. Some thirst, but no evacuations from bowels or bladder. Gave gum-water and a teaspoonful of hydrated *Peroxide of Iron* every forty minutes. In about three hours after this remedy, which with the exception of the second and third doses was well retained by the stomach, she became much better. In twelve hours more she was convalescent, having taken from three to four ounces of the *Iron*. The diarrhoea which supervened passed off in about forty-eight hours.

40. *Lancet*, 1845, vol. i, p. 413.

By Dr. W. Allison.

A girl, æt. 13, took a large teaspoonful of *Arsenic* before 4 p.m., December 2nd, and another dose before 5. Had violent spasmodic pain, according to the report, writhing, twisting about, moaning, and making strange faces. On arriving at the house found her vomiting and more free from pain, but with a sensation of burning heat in throat and stomach, feeble pulse, and cold skin. Gave her

hydrated *Peroxide of Iron*. In ten minutes effectual vomiting occurred. Repeated the dose; vomited freely, and took another dose. In half an hour took an ounce of *Castor oil*, and soon vomited.

3rd.—Several stools containing the *Iron*.

4th.—No stool during night; pulse more natural, pain slight. Repeat aperient mixture. Recovered.

41. *Lancet*, 1845, vol. i, p. 640.

By Dr. W. Woodcock.

Mrs. — took one to one and a half teaspoonfuls of *Arsenic*. Within two hours she was found sitting up in a chair, tossing her arms about, apparently perfectly unconscious of surrounding objects and events. She seemed to be suffering from hysteria. In half an hour more she was able to speak, and said that vomiting had occurred fifteen minutes after taking it on an empty stomach. I gave *Tartar emetic*, *Peroxide of Iron*, and *Carbonate of Magnesia*. Dejections now became frequent and involuntary, and continued for some days, with great excoriation and pruritus. Vomiting did not cease till after forty-eight hours. Some of the contents of stomach were green, and before entirely subsiding appeared mucosanguineous. Gums swelled much; mouth sore; œdema of face and feet; paralysis of hands and feet, with peculiar suffering in circulatory organs; remarkably small and indistinct pulse, with a spasmodic kind of catch in breathing, and sensation in head as if a carpenter was at work with hammer and chisel; gritty feel in eyes, which she was continually rubbing. After eight or nine days she was able to leave her bed, complaining only of boils in different parts of the body, costiveness, conjunctivitis, lameness in walking, with loss of feeling in hands and feet.

42. *Lancet*, 1846, vol. i, p. 693.

Poisoning cases at Norfolk referred to. No particulars given.

43. *Lancet*, 1843-4, vol. i, p. 98.

Report of Medical Society of London.

By Dr. B. G. Bird.

A man, æt. 44, was exposed to the vapour of *Arsenious acid*, evolved from fusing a mixture of 4½ lbs. of *Oxide of Tin* and *Carbonate of Lead* with 3 or 4 oz. of *Arsenious acid*. He soon had extreme dryness of throat, much constriction of fauces, and general uneasi-

ness. He slept for a few hours, but on waking found his symptoms increased. He had uneasiness of stomach, with nausea, occasional vomiting, colicky feeling in bowels, and difficulty of breathing.

These symptoms persisted and increased, and in three or four days profuse *melæna* came on, and he vomited blood, and his sputa were tinged with it. On 12th day Dr. Bird found him with symptoms very similar to those of fever, but without cerebral depression or heaviness. The skin was very hot; eyes retracted; face pale, with a flush on each cheek; tongue furred, with a red streak down middle and redness of tip; pulse throbbing and hard; pain at *scrobiculus cordis*; the last stool had been free from blood, though it was pitch-like. No vomiting for last few days. Posterior lobes of both lungs were found on auscultation to be affected with pneumonia, and the lower lobes on both sides partially consolidated. On 13th day the peculiar pneumonic sputa appeared. Dr. Bird had no doubt of these symptoms being the effect of *Arsenic*, as they resembled the symptoms from the use of *Arsenical* candles, though more severe. Dr. Bird mentioned the case of a woman who was admitted into Guy's Hospital after swallowing half an ounce of *Arsenious acid*. On the 2nd day the gastritis was at its height; the skin became covered with a pale papular eruption, about the size of half a split mustard-seed, somewhat resembling *prurigo mitis*, only larger. (A model of this eruption is in the museum at Guy's.)

In another case the eruption appeared on 3rd day. The German writers mention squamous eruptions as the effects of *Arsenic*.

(2) Dr. Theophilus Thompson said that blistering of the feet had been noticed from *Arsenic* taken as a poison or in large doses. In one case he gave *Arsenic* for a long time until it caused nausea and blistering of the feet. In some cases of psoriasis and eczema, after three or four days' use of *Arsenic*, the eyelids became stiff, with other symptoms.

44. *Lancet*, 1846, vol. ii, p. 216.

By Dr. J. H. Houghton.

Mrs. B— took half an ounce of *Arsenic*. In three quarters of an hour she was seen in a state of considerable mental excitement, but no other symptoms. Had stomach-pump applied, and

Albumen, Sulphate of Zinc, and Hydrated Peroxide of Iron given. In three quarters of an hour more she became composed, and was put to bed, almost free from pain, but had occasional gentle fits of bilious vomiting. Pulse was rather feeble, and she soon seemed disposed to doze. In about two hours more her bowels were moved, with some tenesmus, which kept her on the night-chair for half an hour. In four hours and a half after taking the poison she was found in a state of collapse, from which she never rallied, but remained quiet, dozing during the time, but perfectly calm and collected till she died at midnight, thirteen hours and a half after the poison. She had no gastric symptoms except occasional mild vomiting, and whatever the stomach received was soon rejected.

Post mortem.—Stomach only examined. At pyloric end, on posterior surface of the organ, there was a bright-red patch, nearly the size of the palm of the hand. On the posterior part of the stomach several black streaks, about half an inch wide, running from above downwards, but slanting from cardiac to pyloric end, were observed. Where the black colour was less intense a pinkish blush could be observed through it, and on washing the black deposit away, which was done with difficulty, the mucous membrane beneath was found to be considerably inflamed. This black deposit was left wherever the mucous membrane was inflamed, excepting on the red patch near pylorus, and nowhere else; it was most copious where the inflammation had been most severe. Stomach contained about three quarters of a pint of darkish-green fluid, the consistence of thickish soup. Small red vascular patches were seen in small intestines as they lay *in situ*.

45. *Lancet*, 1845, vol. ii, p. 269.

Experiments quoted from *Medico-Chirurgical Review*, 1845, p. 236. See below.

46. *Lancet*, 1837-8, vol. ii, p. 625-6.

Cases from *Journal de Pharmacie*, July 1838.

Several families drank water impregnated with *Arsenic*. They had pain in head, constant colic, diarrhoea, swelling of limbs, &c.; and many died, from time to time, with the above symptoms.

47. *Lancet*, 1847, vol. i, p. 44.

By Dr. Letheby, read before the *Pathological Society of London*.

A girl, æt, 19, took at night two ounces of fly water, containing two and a half grains of *White Arsenic*. Some restlessness during night followed, with watchfulness, and slight pain in stomach. In morning she became sick and complained of great thirst; the pain in stomach had become much more intense. During the day sickness increased, and she was repeatedly purged; countenance looked pinched, and extremities cold. From this state she soon rallied, and next night (Wednesday) she became cheerful and slept comfortably, though she was distressed once or twice by the thirst, which still affected her. Thursday morning she was worse, being cold and drowsy; she was sent off to hospital, but was evidently dying; face pale and anxious; extremities cold and bedewed with clammy sweat; pulse hardly perceptible; and she lay in a state of incipient coma. When roused she spoke of what she had done, and seemed conscious of her danger. From this time (9 o'clock) she became more and more comatose, and gradually sank at 12, dying thirty-six hours after the poison.

Post-mortem, twenty-one hours after death.—*Brain* very much congested, and lateral ventricles filled with half-coagulated blood. *Lungs* natural. *Heart* flabby, and distended with dark jelly-like blood. On the endocardial membrane, especially where it covered the auriculo-ventricular valves, there appeared a number of hæmorrhagic spots. The *abdominal viscera* were somewhat congested, particularly towards the region of the pelvis. *Stomach* pale, nearly empty, and its mucous coat raised by a number of vesicles containing air.

48. *Lancet*, 1849, vol. ii, p. 651.

By Dr. Robert Barnes.

Nine persons ate a pudding containing *Arsenic*; all were seized with nausea or vomiting during the meal.

They were seen a little after 2.30 p.m. All complained of a feeling of sickness, and all vomited immediately after eating the pudding except the father, who vomited in about twenty or thirty minutes. The infant, aged 17 months, was in a state of collapse. In a short time the patients all complained of more or less pain

in stomach, and burning in throat; "dryness" was their own expression. [Then why did the reporter alter it to "burning?"—E. W. B.] Copious vomiting continued, followed by incessant thirst and great prostration of strength. The father exhibited great anxiety of countenance. They then took a mixture of white of egg, flour and milk, which was almost immediately rejected by all the patients. The prostration increased. At 4.30 p.m. there were the following symptoms:

The father, æt. 33, was pale, with great prostration and anxiety of countenance, and, though not unconscious, had some degree of stupor; some pain (not great) in stomach; pulse quick, and depressed in character. The mother and sister did not exhibit any great prostration; the pulse in both was quick, but pretty strong. The mother was flushed in the face, and did not complain of much pain. The eldest boy, æt. 12, was a little flushed. The five remaining children, all under 9 years of age, were all greatly prostrated; their countenances pallid and anxious; pulses scarcely perceptible, and their extremities cold. James æt. 9, had in addition severe pain in stomach and bowels, and drew up his legs. The infant was profoundly collapsed; the pupils acted under alternations of light and shade. They all took *Ipecacuanha* and *Sulphate of Zinc*, which made them vomit freely; then they took *Hydrated Peroxide of Iron*.

After this the vomiting continued at intervals, and to counteract the increasing prostration, stimulants were given.

James, æt. 9, sunk into perfect collapse, with blue lips, cold extremities, and no pulse, and died at 6 p.m.

John, æt. 3, died similarly at 7.30 p.m.

Henry, æt. 17 months, died convulsed at 9 p.m.

Mary Ann, æt. 4 years and 10 months, died, as did *James*, at 10.30 p.m.

Harriet, æt. 6 years, died at 11.30 p.m.

Next day, 9 a.m., the father had fallen into greater prostration; pulse scarcely perceptible; body generally cold and clammy; hands and feet very cold; did not complain of much pain; had been freely purged; the vomiting abated about midnight, after which time he retained fluids.

The two women did not appear to suffer much; tongues red and clean at the points and round margins, with slight white creamy fur in middle. The sister complained of headache; was

flushed; pulse 100, rather strong; skin warm and moist; thirsty; had passed no water; had been purged; some tea taken in the morning remained on stomach. The mother was less feverish than sister; had passed water.

The man died at noon, no vomiting having occurred; he retained his consciousness to the last.

The eldest boy had no remarkable symptoms.

On third day, at 8 a.m., the sister still complained of headache; sometimes violent throbbing in stomach; pulse full, 90; face flushed; had passed urine, scanty and very red. Recovered in a few days.

The mother and eldest boy were well on third day.

Post-mortem appearances.—(1) Thomas, æt. 33, survived twenty-two hours; autopsy nineteen hours after death. *Stomach.*—Intense arborescent and punctate injection generally; large end shows extensive *post-mortem* blackening, and solution of mucous membrane. *Duodenum.*—Injected strisæ. *Jejunum.*—General intense injection. *Colon.*—Patches of injection. *Rectum.*—Arborescent and punctate injection in points, appearing ecchymosed. *Heart.*—Several distinct points of extravasated blood under lining membrane of left ventricle. One drachm of fluid blood in left ventricle; loose, tarry coagula in right; blood generally fluid. *Lungs* natural; of a deep indigo colour in front as well as behind. *Kidneys* congested; bladder empty.

(2) James, æt. 9, survived four hours; autopsy thirty-seven hours after death. *Stomach.*—General minute injection, especially along lesser curvature. *Duodenum.*—Arborescent punctate injection in patches. *Jejunum* injected throughout (also the *ileum*).

(3) John, æt. 3, survived five hours and a half; autopsy fifty-eight hours after death. *Esophagus* slightly rosy inferiorly. *Stomach* rosy, but no marked injection. *Jejunum* slightly injected. *Ileum.*—Strongly marked injection at termination. *Colon.*—Slight patches of arborescent injection, more marked at sigmoid flexure. *Rectum.*—Slight arborescence. *Heart.*—One or two slight petechial points under lining membrane; left ventricle contained one drachm of black, tarry blood; right ventricle same; blood generally fluid. *Kidneys* congested; *Bladder* empty.

(4) Mary Ann, æt. 4 years and 10 months, survived eight hours

and a half; autopsy fifty-eight hours after death. *Œsophagus* rosy, but not injected. *Stomach* rosy, and arborescent injection in patches, most along small curvature; some greenish discoloration and softening. *Duodenum* intensely injected, fading away towards end. *Jejunum* pale (also *ileum*). *Colon*.—Patches of arborescent injection at commencement. *Heart*.—In left ventricle and auricle, small quantity of slightly coagulated black blood; in right ventricle and auricle, fibrinous concretion; blood generally fluid. *Kidneys* and *liver* congested.

(5) Henry, æt. 17 months, survived seven hours; autopsy fifty-seven hours after death. *Œsophagus* rosy, not injected. *Stomach* rosy, especially at pyloric end. *Duodenum* minutely injected. *Jejunum*.—Upper part more vascular than natural. *Ileum* slightly rosy at commencement. *Colon* injected at commencement; arborescent injection marked at sigmoid flexure. *Heart*.—Left ventricle empty; left auricle contained loosely coagulated blood; right ventricle contained a little thin fluid blood; right auricle filled with loose coagula. *Kidneys* slightly coagulated; *Bladder* empty.

(6) Harriet, æt. 6, survived nine hours and a half; autopsy fifty-four hours after death. *Œsophagus* pale. *Stomach*.—Arborescent injection in patches, very marked; greenish discoloration and softening at large end. *Duodenum*.—General intense injection. *Jejunum*.—Arborescent injection in places. *Ileum* pale. *Colon*.—Injected patches at end. *Heart*.—Left ventricle and auricle contained one drachm of black, tarry blood; right ventricle and auricle, firm fibrinous concretions; blood generally fluid. *Bladder* empty.

The stomach of four of the children exhibited enlargement of the glands.

Additional symptoms.—All preserved consciousness to the last, except the infant; the pupils continued to act, and in all cases were dilated at death. The infant died convulsed; and one showed contraction of the fingers with the thumbs turned inwards after death.

49. *Lancet*, 1848, vol. ii, p. 503-4.

(1) Case by Dr. L. Owen Fox.

A man, æt. 21, took a teaspoonful of *Arsenious acid* at 6 a.m. He took emetics, which acted. No symptoms of poisoning till

noon, when diarrhoea suddenly came on; he vomited also two or three times yellowish fluid. He was found sitting by the fire in a drowsy state, but easily roused; countenance sunken and livid; pulse rapid and extremely feeble; surface of body cold, and watery, greenish, involuntary stools. Answered questions rationally, and had no pain. Went to bed, had brandy and water, and hot water to feet. He rallied and got out of bed, when he complained of dimness of sight, lay down, and died in a few minutes.

Case mentioned by Dr. Taylor in his *Medical Jurisprudence* referred to; see original.

(2) By Dr. Walter Clegg.

A girl took at noon a teaspoonful of *White Arsenic*. At 5 p.m. she was sitting in her chair, more asleep than awake. On rousing her she reeled about the room as if intoxicated. She vomited once after dinner, but there were no other symptoms till thirty minutes before she died, which was at noon the next day.

Her face was very pale, and she felt faint and giddy. Took *Sulphate of Zinc*, which caused vomiting, and *Peroxide of Iron*. At 11.30 a.m. next day she suddenly complained of an excruciating pain in body, with excessive prostration of strength. She went to lie down, and at noon was found dead kneeling by the bed.

Autopsy, forty-eight hours after death.—*Stomach* contained half a pint of a thin dirty-green fluid; the mucous coat was much corrugated, having a fungoid appearance, very soft, and so fragile that a touch of the finger tore it away. Three or four large reddish-brown patches were observed, and these extended into the intestine considerably beyond the duodenum.

50. *Lancet*, 1848, vol. ii, p. 648.

By Dr. Henry William Fuller.

Some partridges, having eaten *Arsenic*, were found dead, sitting with their heads erect and eyes open, instead of lying on their side as usual. Two were examined, and the œsophagus found highly inflamed throughout. Intestines remarkably empty and clean. A cat who ate some of one partridge began to vomit in half an hour, and continued to vomit almost incessantly for twelve hours with excessive pain.

51. *Lancet*, 1848, vol. ii, p. 697.

By Dr. Headland.

A child took some *Arsenic*. It was pale, faint, had vomited largely and purged frequently; pain in bowels. Stools were colourless, like thin gruel, here and there a bloody mark, then blood itself. The vomiting and purging continued for three days; after which the child was convalescent.

The same day another child was taken ill from the same cause; similar symptoms, but no pain; abdomen was slightly swollen.

The children had imbibed the poison from a toy which was covered with a fine white powder consisting of *Arsenic* and *Carbonate of Lead*.

52. *Lancet*, 1849, vol. i, p. 35.

By Dr. William Robert Cornish.

A girl and a man took one ounce of *Arsenic* each after 9 p.m., November 18th. Soon after 11 p.m. they were found lying down, apparently insensible. The man, on being roused, began to be sick. [No further report of his symptoms here given.—E. W. B.]

The girl was seen at 1.30 a.m., November 19th; she had then vomited two or three times half-digested food. She had severe burning pain in throat, stomach, and bowels. She was wild and excited, and had evidently been drinking freely.

Emetics were given, which acted, and *Peroxide of Iron*. The vomiting was kept up at intervals of a few minutes till 4 a.m., when she seemed much easier. At 5.30 a.m. the vomiting had ceased; she had no pain, and had dozed a little. Effervescing salines.

8 a.m.—Much better; slight pain in stomach.

11 a.m.—Not so well; more pain on pressure over stomach; is restless and anxious; severe headache; very thirsty; lips parched and dry; tongue moist; pulse 100, full, but compressible. Twelve leeches to stomach and poultice.

3 p.m.—No change.

7 p.m.—Pain less; very thirsty; burning heat at back of tongue and throat; pulse quick and fluttering; has had a little sleep.

November 20th, 10 a.m.—Passed a restless night; has had severe pain in stomach for three or four hours, but it is better this morning; very thirsty; tongue moist, covered with a white fur; pulse weak, about 80. Effervescing mixture,

10 p.m.—Not much change; headache; slight conjunctivitis with intolerance of light.

21st, 10 a.m.—Burning heat in throat and stomach; tongue moist with a white fur; pulse feeble, 78; no stool. Repeat medicine, and to take an enema, which acted.

22nd, 10 a.m.—Less thirst; feels quite well.

23rd, 10 a.m.—Severe pain in stomach for two or three hours during night, better this morning; thirsty; tongue moist and clean; no stool. Repeat enema; a saline mixture, and small doses of *Opium*.

10 p.m.—Attempted to get up, but could not stand; tingling and numbness in legs and arms; has had severe pain in stomach and bowels for two or three hours during day; very little thirst or fever.

24th.—No pain except on pressing stomach; pulse weak, but regular, 70; numbness and tingling still; no stool. Repeat medicine, and *Compound Colocynth* pill.

25th.—Better still, only slight uneasiness in stomach on pressure; very weak; no tingling; pulse weak, but regular; more appetite.

10 p.m.—Has been up all day; weak and tired, but seems otherwise well.

26th.—Not so well; restless last night, with severe pain in stomach and griping in bowels; thirsty and feverish; lips excoriated; gums and mouth feel sore; gums are inflamed and spongy, and bleed with the slightest touch; pulse 68, regular; severe headache; no appetite; no stool. Soon recovered, and on December 2nd became an out-patient.

53. *Lancet*, 1858, vol. i, p. 618.

By Dr. Gibb.

A lady took *Arsenic* for many years for an eruption. After death a trace of it was found in liver and bones. Seven months before her death she had a violent attack of neuralgia of the shoulder, which afterwards extended to both groins, the thorax, and back. This was relieved for a time, but continued with most agonizing severity. The abdomen became enormously tympanitic; muscular paraplegia slowly ensued, and she died.

Post mortem.—General enlargement of thoracic and abdominal glands, many of which had assumed the non-malignant form of

melanosis. The termination of the ileum was bound down by a fibrous band. Dr. Gibbs considered this disease due to the *Arsenic*.

54. *Lancet*, 1858, vol. ii, p. 462.

By Dr. George Waite.

Arsenic was applied to a decayed wisdom tooth for several days, when severe spasms, vomiting, and diarrhoea came on. Fever afterwards set in with delirium, and the patient's life was in danger. After the fever there was extreme debility, and the parotid and submaxillary glands continued much swollen. Abscesses of the jaws came on, the hair fell off, sores broke out over the head and neck, and after eighteen months he said he felt he would never recover from its effects.

55. *Lancet*, 1849, vol. ii, p. 1.

By Dr. George Anstice Knott.

A man swallowed half an ounce of *Arsenic*. At 10 a.m. found him in a state of temporary insanity, said to have been caused by indulgence in spirits for the past fortnight. Gave emetic and *Peroxide of Iron*. At 10.30 patient had vomited every three or four minutes since last visit. Repeat *Iron* and give *Prussic acid*, *Carbonate of Soda*, &c.

3 p.m.—Still vomiting, with pain in stomach-pit; great restlessness; pulse 100, full; mind more composed; readily swallows anything offered him; excessive thirst. Repeat medicine.

8 p.m.—Sickness much better; feels better; pain in stomach less, but fresh pain at pylorus, worse by pressure; pulse good. Blister over stomach.

11 p.m.—More comfortable; pulse 120, full; great pain over stomach; no sleep. Six leeches over pylorus, and continue mixture with *Opium*. Sickness less, but he suffers from flatus, which is frequently expelled upwards with force.

Second day, 3 a.m.—Great restlessness; pulse weaker, 120; tongue moist, with two circular ulcers at base; mind distressed; complains of great prostration. Beef-tea, arrowroot, and brandy. Sickness much better; less pain over stomach, but tenderness on pressure over great part of abdomen. Sucking ice relieves him. Continue mixture.

7 a.m.—Pulse more feeble; frequent sighings and mutterings expressive of grief at having committed the rash act; sickness

less and less; no pain; great restlessness; body warm; face covered with drops of sweat. Gave *Sulphuric Ether* and *Bark*. Remained the same during the day, and passed a comfortable night.

Third day, 7 a.m.—Seemed doing well; pulse 100, and with power. In two hours he had rapidly sunk; no pulse at wrist; extremities cold; not sensible, except when roused. Died at 4 p.m.

Post mortem.—Upper part of œsophagus vascular, terminating in a distinct line of demarcation, where commenced gangrene of the mucous and muscular coats, reducing it to a very thin tube, extending down to within an inch and a half of the cardiac orifice, where it again assumed a vascular character. An irregular patch of gangrene, black and smooth, with no attempt at separation from the living tissues, in the greater curvature of the stomach; and the pyloric extremity presented a similar appearance, blackened in its entire extent. Here and there in stomach slight patches of ecchymosis.

56. *Lancet*, 1849, vol. ii, p. 311.

By Dr. Michael McGee.

A girl, æt. 10, had taken ten grains or more of *Arsenic*. When seen, one hour afterwards, she was much excited and crying; no other symptoms. Gave emetics and *Peroxide of Iron*.

Being very much exhausted, she fell into a composed sleep for two hours. On waking she had great thirst; drink was immediately rejected; pulse very weak; spasms in legs. Two hours afterwards, pain in stomach; bowels griped and freely moved. Next night, no sleep; stools very numerous; thirst excessive; much better towards morning; tenderness of gums, with great loathing of stomach. Recovered.

57. *Lancet*, 1857, vol. ii, p. 114.

By Dr. Thomas Godfrey.

A middle-aged woman swallowed, in a fit of rage and jealousy, a dessert-spoonful of *Arsenic*. In an hour and a half took emetic of *Sulphate of Zinc*; afterwards *Peroxide of Iron*, which she did not retain longer than five minutes. At one time the prostration became alarming, pulse rapid and barely appreciable, features distorted, cold sweat of body, and severe rigor. In five hours after the *Arsenic* she refused to take more liquid; and as she had

rallied and seemed drowsy, she was allowed to sleep for seven hours, when she seemed quite recovered, except a slight epigastric tenderness, probably due to the vomiting.

58. *Lancet*, 1857, vol. ii, p. 127.

By Dr. Robert Crawford.

Those who wash sheep with *Arsenic* have various eruptions on the parts most exposed, chiefly arms and legs; sometimes the eruptions resemble eczema, but more frequently they are pustular, and large boils are not uncommon.

59. *Lancet*, 1857, vol. ii, p. 181. [Misprinted in "Index" 299.]

By Dr. Robert Crawford.

Severe eruptions, violent constitutional symptoms, and even death, have resulted from washing sheep with *Arsenic*.

60. *Lancet*, 1857, vol. ii, p. 281.

By Dr. Walter Watson.

On August 14th two shepherds were washing sheep (with *Arsenic*) for nine hours. Both were similarly affected the next day.

On 18th one seemed to have had his whole scrotum covered with *eczema rubrum*, and it now resembled the appearance of the dermis after vesication and separation of the cuticle in frequent patches. The vesicles had been closely aggregated; many of them were still discharging, while others were in an encrusted state. He lay on his back, and the motion of pelvis or thighs was almost intolerable. The pain seemed to be exquisite, though he was a man of great spirit and endurance. There had been vesicles on the thighs, while the eruption on the legs had more of the character of a stain, and lay chiefly at the roots of the hairs. There was slight febrile constitutional disturbance, but peculiarly intense thirst, which no drink could allay. He got well in a few days. The powder he used for the sheep was a mechanical mixture of *Oxide of Arsenic* and *Carbonate of Potash*, the quantity of the former much preponderating. He had often suffered from similar eruptions in a milder degree, but never after one day's dipping. Five other shepherds say that they never suffer from the use of *Tobacco infusion*, *Oil of Tar*, *Black Soap*, or *Sublimate*;

but several of them have suffered, after using *Arsenic*, from eruptions, chiefly on hands, forearms, scrotum, and thighs, and the suffering proves intense should they have chapped hands at the time. Almost all of them can relate cases of severe constitutional as well as local irritation.

61. *Lancet*, 1851, vol. i, p. 212.

Dr. Forget's case imperfectly quoted ; see below.

62. *Lancet*, 1851, vol. i, p. 382.

Notice of a work called *The Use and Abuse of Arsenious Acid as an Agent for Destroying the Dental Pulp and Nerve, Curing the Toothache*. By A. C. Castle, M.D., surgeon-dentist, New York, folio, p. 7.

This work contains the effects of *Arsenic*, and should be examined.

63. *Lancet*, 1870, vol. ii, p. 356.

By Dr. H. Hicks.

A strong, healthy man, æt. 49, was poisoned by *Arsenite of Copper*, inhaled when pulling off a green wall-paper between 1 and 2 p.m. During the same afternoon he had dryness of throat and mouth, and thirst ; afterwards also fulness of stomach, with tenderness and nausea. Early in evening he took Holloway's pills, and about 11 p.m. had loose stools with severe griping pains.

About 1 a.m., when on the stool (the bowels having now acted several times), he suddenly felt great difficulty in breathing, with cramp in the chest, hands, and arms. Immediately afterwards the cramp attacked both calves, and he became very cold all over, and stiff, so that he became completely helpless, and had to be entirely lifted into bed. Violent vomiting very soon set in, and the cramp became more severe in the calves, though it did not again affect the chest and arms.

The breathing, however, continued to be much oppressed, and lasted so till he was seen about 3 a.m. He was by this time in a state of great prostration ; countenance strangely anxious, and very restless ; skin cold and clammy ; pulse very feeble and frequent ; eyes deeply sunken and surrounded with a well-marked dark border ; lips and tongue parched, with great thirst ; breath-

ing slow and much oppressed, sometimes sighing; burning pain in stomach, increased on pressure, and inclination to vomit; extremities icy cold, in spite of hot applications; has had severe vomiting, with griping pain in bowels, and purging; also cramps, first in chest and arms, and afterwards in calves. A few minutes after he was seen (3 a.m.) most violent cramps came on in both calves, causing intense suffering, and rendering the muscles hard and knotty. The cramp came on almost every fifteen minutes, lasting a few minutes each time. The slightest movement, such as turning in bed, seemed at once to excite the spasm. Violent vomiting of a greenish-yellow fluid also occurred at intervals. Brandy and all warm drinks were almost immediately rejected, but a little cold water was retained. Mustard plasters applied to the spine, chest, and calves, were scarcely felt by him; hot jars were applied.

By 5 a.m. there was more warmth, and he seemed easier; but the cramp still came on at intervals; the vomiting was less frequent. No stool since 3 a.m. At 8 a.m. cramps less severe; has retained a little arrowroot and milk; less burning in stomach; countenance somewhat less anxious, but still very restless; pulse small and hurried, 110; breathing less oppressed.

2 p.m.—Cramps almost gone; vomiting ceased. Rather feverish and thirsty, and has griping in bowels. Complete suppression of urine for twenty-four hours in all, and great weakness for several days. Recovered.

He had never before had cholera or cramp, nor was there cholera in the neighbourhood.

64. *Lancet*, 1851, vol. i, p. 410.

By Dr. W. B. Ryan.

A man, æt. 35, took half an ounce of *Arsenic* at 2 p.m., July 13th. He began to vomit at 11 p.m. He did not rise from bed till 7.30 a.m. next day (July 14th), and then did not complain. About 1 p.m. he was seen; he lay in bed on his back, vomiting frequently; extremities were cold; no pulse at wrist, slightly perceptible higher up; no pulse in dorsalis pedis, nor in posterior tibial, behind the inner ankle. He frequently raised himself on his elbow to vomit, and then fell back exhausted. Thirst intense; drank much during morning; burning pain down œsophagus; severe pain across epigastric region, more acute over region of

liver, much increased on pressure; pain over abdomen; restless and tossed about, ejaculating frequently. The vomit was sometimes yellow and sometimes very dark green. During the first visit he wandered a little; from first to last there was no attempt to rally. On Thursday night (July 15-16) the symptoms increased to intensity; he passed dark, bloody, very offensive stools.

July 16th, 10 a.m.—Pulse scarcely perceptible high up; restless; internal burning pain; spasms of extremities. Died convulsed at noon.

65. *Lancet*, 1851, vol. ii, p. 522.

Case referred to of a Mr. John Carr, published in the New York papers. Thirteen persons poisoned, but no symptoms given. These papers should be examined for it.

66. *Lancet*, 1851, vol. ii, p. 552.

By Dr. Henry Dermott.

A woman, æt. 23, took part of a tablespoonful of *Arsenic* in the morning of February 10th. In two hours she became sick, and continued to be so at intervals for some hours.

Feb. 11th, 3 p.m.—Was found lying in the road, almost lifeless; extremities cold; pulse scarcely perceptible at wrist; eyes bright and glistening; vessels of cornea much injected. Intense headache, increased by light and noise; was quite unable to raise herself without assistance; tongue dry and morbidly red, with papillæ considerably raised at tip; lips dry and covered with herpes; mucous membrane of mouth slightly abraded; face pallid and anxious; great pain in epigastric region in paroxysms, accompanied with general tremor of the entire frame. On the ground was a quantity of sputa, as if she had been retching for some while.

Warmth was applied, and brandy and water given; afterwards *Sulphate of Zinc*, which caused, in a few minutes, vomiting of a dark glutinous matter mixed with clots of coagulated blood; and after each effort at vomiting, about a teaspoonful of bright florid fluid blood was brought up. Had passed no urine since previous morning. Gave *Hydrated Peroxide of Iron*: a few minutes after each dose she was violently sick, and continued to bring up fluid blood. Gave white of egg, mucilaginous drinks, and *Castor oil*.

8 p.m.—Rigors still very severe, as also the pain on pressure in epigastrium. Also there is an annoying sensation of constriction in œsophageal region.

Feb. 12th, 8 a.m.—Intense pain about *scrobiculus cordis*, extending up œsophagus; great difficulty of swallowing even fluids; breathing hurried; face flushed and anxious; constantly asking for cold water; tongue dry and parched, with papillæ much raised; pulse 110, very small in volume; skin dry and harsh, emitting a pungent odour; violent throbbing headache. The bowels had been very freely relieved during the night of a quantity of dark-looking fæces. Ten leeches to the seat of pain, and sinapism to part of sternum. *Calomel*, *Acetate of Ammonia*, *Nitrous ether*, *Tartar emetic*, and *Camphor* were also given.

10 p.m.—Much better; breathing not so quick or hurried; face more natural; eyes less bright and glistening; slight pain still on pressure; pulse 90, small and compressible; slight smarting pain on swallowing fluids; three stools during day; urine very scanty and high-coloured.

13th, 8 a.m.—Tolerably good night; pain almost gone; skin cool; pulse a little quiet; tongue moist, papillæ less raised. Continue medicine.

10 p.m.—The pain has returned very severely, and sets in with paroxysm; it is more diffused towards the right hypochondrium; abdomen distended with flatus. Ten leeches, *Castor oil*, and hot fomentations.

14th.—Is now under the influence of the *Chloride of Mercury*, which has produced depression of the general system; pulse very small and weak; skin cool; lips clean and moist; tongue white and furred, but moist; passed during the night a large quantity of dark, bilious-looking fæces. To take beef-tea. Omit the *Mercury*. Repeat mixture, and *Castor oil*.

15th.—Is much better; face natural; urine highly charged with lithic acid; no thirst; slight griping pains in epigastrium. Repeat *Castor oil*.

16th.—Has a harsh dry cough, but no expectoration; it is apparently excited by irritation of fauces and stomach; relieved by *Prussic acid*. Repeat *Castor oil*.

17th.—No pain or tenderness; tongue cleaning at sides; desire for food.

18th.—Ate a mutton chop at her particular request. After

eating it, considerable pain and uneasiness in epigastrium; this continuing, an emetic was given next morning, which removed it in a half-digested state.

19th.—Well, except digestive organs have not quite regained their tone. She had both before and after the remedies vomited a great quantity of blood, which made it probable that the mucous membrane of stomach was eroded.

67. *Lancet*, 1863, vol. ii, p. 190.

By Mr. Holmes Coote.

A man, æt. 20, was exposed to the vapour of emerald green containing *Arsenic*, sulphate of copper, and nitric acid. He had been ill for one week before admission. Face was swollen, eyes nearly closed, conjunctivæ congested, nostrils sore, scalp tender. Both hands swollen and excoriated, with patches of slough on one of fingers; left foot was also affected. The disease first commenced in nostrils and finger. Convalescent in a month.

68. *Lancet*, 1860, vol. i, p. 8.

By Dr. R. Biggs.

Poisoning by green paper containing *Aceto-arsenite of Copper*. The man had several small superficial ulcers extending along the inner surface of each lip, varying in size from mere specks, the largest being $\frac{1}{8}$ inch in diameter. The smarting and annoyance were intolerable, and much increased in the evening [when he inhaled most of the poison] when the lips swelled, and became so painful that eating or even speaking could scarcely be indulged in. He got better, but returned worse than ever; all the old ulcers had reopened, several new ones formed, lips much swollen, with profuse pytalism. Cured in three weeks, after removing the cause.

69. *Lancet*, 1860, vol. i, p. 129.

By Dr. Ballenden.

Three children near Tipton had emaciation, pining, general restlessness worse at night, and twitching of face muscles; from *Arsenical* paper.

70. *Lancet*, 1860, vol. i, p. 579.

Editorial article on *Arsenic*-eating.

An *Arsenic*-eater made two attempts to give it up; he quickly suffered from faintness, palpitation, intense depression of spirits, total incapacity for exertion, loss of sleep, and finally from an inflammation of lungs which threatened to be fatal; he believes he only saved himself from death by resuming the *Arsenic*.

71. *Lancet*, 1863, vol. i, p. 204

Effects of *Arsenite of Copper*; by Dr. Arthur Hill Hassell.

Ugly-looking sores appear on various parts of body, including all the exposed parts; constant soreness of and running from eyes and nose; chest and throat sore; cough; at last diarrhœa; phthisis has been developed.

72. *Lancet*, 1860, vol. ii, p. 494.

Poisoning by *Arsenite of Copper* in a wall-paper. By Dr. Metcalfe. (See below.)

73. *Lancet*, 1860, vol. ii, p. 518.

Editorial article.

References made to cases reported by Drs. Taylor, Hassell, Metcalfe, James Whitehead (in 1858), Loring (in a recent number of *Union Médicale*), and De Pietra-Santa (in *Annales d'Hygiène* for October, 1858).

74. *Lancet*, 1860, vol. ii, pp. 535-6.

By Dr. J. B. Metcalfe. Poisoning by *Arsenite of Copper*.

Nov. 1st.—A boy, æt. 3½ years, refused his breakfast, felt chilly, and was sick; at 10 a.m. was seized with convulsions, for which he was put into a warm bath, and they soon passed off; 11 a.m. he was in a semi-comatose state, face placid, skin warm, bowels had acted several times, the stools passing involuntarily, watery, bilious, and very offensive; no abdominal tenderness. In evening it was reported that slight convulsive twitchings of facial muscles had been observed; had been more feverish, but was now less so; had not been sick; bowels less freely open. Next day, 7 a.m., another child had been seized with convulsions with violent shrieks and severe dysentery. The first child was almost in a state of asphyxia, skin cold, pulse feeble, face livid. He improved by stimulants, but in afternoon he was again seized with a severe tetanic convulsion, and from that time alternations of

repose and convulsion (amounting sometimes to perfect opisthotonos) continued till he died at midnight, thirty-eight hours after the commencement of the attack.

Post mortem.—The dejections from the boy in the napkin were deeply tinged with bile; those from girl were of a deep yellow colour. *Stomach.*—On inner surface, its œsophageal end, there were small red patches. Contents of stomach were five fluid drachms, somewhat thick, like gruel, and dark chocolate brown. A piece of large intestine was somewhat redder than usual, and showed marks of irritation in mucous coat.

75. *Lancet*, 1860, vol. ii, p. 596.

By Dr. George Evans.

An old lady inhaled *Arsenite of Copper* from a wall-paper. She had frequent and violent spasms of bowels; dry mouth; feeling of constriction about fauces on waking; nausea and occasional vomiting; constipation. Two women who had slept in the same room complained of pains in stomach and bowels.

76. *Lancet*, 1860, vol. ii, p. 596.

By Dr. W. G. Blogg.

The workmen who make *Scheele's Green* paper have their lips and noses swollen to double their natural size.

77. *Lancet*, 1864, vol. i, p. 697.

By Dr. C. W. Bingley.

A woman between 35 and 40 took *Arsenic*, and died suddenly. After 5 p.m. the day before her death she appeared ailing; afterwards she was sick on drinking tea, and vomited twice. She got out of bed and was seized with cramp in legs, and could not get back. She was found dead at 5 a.m. the next day.

Post mortem.—*Stomach* contained four fluid ounces of a mucous liquid tinged with dark blood; dark blood suffused between the rugæ; no ulceration or perforation of coating of stomach, but the whole was inflamed, and of a dull reddish brown, that became brighter after exposure to the air. Small intestines inflamed, especially that part of duodenum adjoining pylorus.

78. *Lancet*, 1861, vol. i, p. 171.

Copied from a French paper of some months back.

Effects of *Arsenical* flowers. Eruption on face; taste of copper which prevented him from taking his usual food; colics, &c.

Another case is reported in the previous day's impression of *Galignani*.

79. *Lancet*, 1861, vol. ii, p. 361. (Misprinted in "Index" vol. i.)

By Dr. William Thomas.

Effect on a lady of sleeping in a room papered with green *Arsenical* paper. Nausea, vomiting, heat and dryness of mouth and fauces, pains in stomach and bowels, and considerable constriction of chest.

Another lady who slept in the same room had similar symptoms, with great loss of appetite.

80. *Lancet*, 1861, vol. ii, p. 530. (Misprinted in "Index" vol. i.)

Editorial paper.

Arsenite of Copper proved fatal to a woman named Matilda Scheurer; she suffered for eighteen months. The cause of death was acute inflammation of the lining membrane of intestines.

81. *Lancet*, 1860, vol. ii, p. 535.

By Dr. Hassell.

Effects of *Scheele's Green* on 200 or 300 manufacturers. They all labour, some severely, from *Arsenical* poisoning. The symptoms are, general derangement of health, debility, nervousness, headache, thirst, sickness, loss of appetite, and diarrhoea; soreness of throat and gums; œdema about eyes; soreness of, and running from, nose, and ugly-looking sores on hands, face, and neck, and other parts to which the poison finds access.

CASE 1.—A man, æt. 45. Constant nausea, loss of appetite, thirst, and headache; occasional diarrhoea; throat sore, gums tender; much more nervous than formerly. The eruption began in four or five days after using the pigment. It began in the form of greenish pimples on hands and face; these bursting, left holes having eroded edges. Also eruptions on scrotum and groins. The eruptions lasted some months. On resuming work the symptoms returned nearly as before.

CASE 2.—A man, æt. 27. Felt the effects in two or three days. Much thirst; tongue white; highly nervous; sleep disturbed and unrefreshing; weakness; loss of appetite; bowels very much relaxed for eight or ten days, acting some six times daily; weight on chest and difficult breathing; eyes swollen in morning; nose sore inside and discharging freely; gums tender. In about fourteen days after using the poison sores broke out in various parts of the body—on the hands, forehead, behind ears, at roots of nails, and on scrotum, the sores presenting a dark and very unhealthy appearance.

Eight women and two boys were working in the same room as the above patients; they were all affected in much the same way. All had sores; the girls, at the back of neck, on sides of nose, and on hands; their eyes were also affected, and there was running from the nose.

82. *Lancet*, 1866, vol. ii, p. 390.

Poisoning by *Arsenic* by a herbalist. (Editorial.)

Patient died in a fit. Stomach (on *post mortem*) was reddened and streaked.

83. *Lancet*, 1866, vol ii, p. 506.

By Dr. James V. Bell.

Some people drank water impregnated with *Arsenic*. The first family had sickness and burning at stomach, but soon recovered. The second family (a man and his wife) were both ill in bed with vomiting, purging, pain in stomach and limbs, and sense of exhaustion. They had had some sickness and pains in stomach-pit for two or three days; tongues loaded with fur, with morbidly red edges; pulses, that of the man especially, fluttering and rapid. They could not sit up in bed without difficulty, and had frequent retching. They were very ill for a fortnight with gastritis, conjunctivitis, &c. It was more than a month before the man could walk about, and twelve months before he could do any work. The pains in his limbs were violent for some time, and afterwards he could only walk unsteadily with a stick for some months.

84. *Guy's Hospital Reports*, vol. ii, 1837, p. 68.

By Dr. A. S. Taylor.

A woman, æt. 25, took about forty grains of *Arsenic* at 4 p.m. In one hour she became very ill and vomited; had pain in stomach, great thirst, and feeling of constriction in throat. At 11 p.m. countenance was pale and anxious; extremities cold; occasional vomiting; great thirst; tongue moist, but very red; pain in stomach not great, and not increased by pressure; pulse 134, very irregular, but rather full.

Next day, at 1.30 a.m., there was great thirst, but no increase of stomach pain. Tongue dry and red; extremities warm; heart acting rapidly but feebly, pulse being 132, small and feeble. After this she had some rest for about an hour and a half, but she then became extremely restless, repeatedly calling for liquids. The thirst continued unabated till death, which occurred at 7.15 a.m. in a slight convulsive fit.

Post mortem eight hours after death.—Lining membrane of bronchiæ rather dark and congested. Stomach contained a dirty-yellow liquid, somewhat tenacious. Mucous membrane of stomach very rugose, especially at larger extremity and inferior portion. The edges of rugæ were for the most part vascular, whilst in the intervening depressions there were here and there dark-coloured patches of blood, extravasated beneath the mucous membrane. Great vascularity of the membrane in the upper part of the organ, and three distinct lines of a vermilion redness (the colour having become a little more intense by exposure) running parallel to each other, for nearly the whole of the interspace between the pyloric and cardiac orifices. These lines terminated in a well-defined margin of redness, situated at the junction of the cardia with the œsophagus. Near the larger curvature, towards the pylorus, there was a large prominent oval patch of thickened membrane, about three inches in length and two in breadth; it was covered with a dense layer of opaque mucus, separated with difficulty, containing small granules of *Arsenic* diffused in a white pasty mass. When the surface was washed it was seen to be of a yellowish colour in the centre; and it was surrounded by a dark margin, as of extravasated blood. At this part the coats of the stomach were at least three quarters of an inch in thickness. Peritoneal coat slightly injected. Small intestines contained a great quantity of viscid mucus, tinged with blood. Duodenum slightly vascular; jejunum in a high state of inflammation, in circumscribed patches,

these portions of the mucous membrane being covered with an easily separable layer of mucus. The lining membrane of the last twelve inches of ileum, as well as that of the cæcum, was slightly inflamed.

Reference for cases of poisoning made to Christison *On Poisons*; Orfila's *Toxicologie*; Henke's *Lehrbuch der gerichtl. Medicin.*, 441; Meckel's *Lehrbuch der g. M.*, 216-7; Niemann's *Taschenbuch d. S. A.*, 440; Martini in *Introduzione alla Medicina Legale*, vol. ii, 380; Metzger's *System der gerichtlichen Arzneiwissenschaft*, 256; and Pyl in *Aufsätze und Beobachtungen*, I, 58.

CASE 2.—A woman, æt. 22, took at 8 p.m. one ounce of *White Arsenic*; soon followed by vomiting. At 9 p.m. surface was cold; pulse small and quick; vomited chiefly mucus slightly streaked with blood; violent diarrhoea. At midnight coldness of surface; depression of countenance; restless; livid lips; glaziness of eyes; rapid, feeble, and irregular pulse; pain in abdomen, materially increased by pressure, especially in epigastric region; occasional vomiting of mucus tinged with blood; breathing somewhat accelerated and accompanied with frequent sighing. The diarrhoea had now ceased, and there was a slight tendency to coma.

At 4 a.m. all the above symptoms had rather increased, and there were cramps in legs.

8 a.m.—Vomiting had ceased; pulse at wrist imperceptible; coma increased; very restless.

10 a.m.—Restlessness subsided; quiet; heart's action failing; breathing laborious.

1 p.m.—Died.

Post mortem twenty-six hours after death.—Mucous membrane of stomach highly inflamed throughout, and in many parts ulcerated. The rugæ of the membrane were not very numerous, but their summits were especially the seat of inflammation and ulceration. Mucous membrane of duodenum much inflamed, and considerable patches of inflammation and ulceration on that of the ileum. Mucous membrane of colon and rectum slightly injected. Oesophagus inflamed, and lining membrane of larynx and trachea highly injected.

Schweickhard has met with a fatal case of poisoning in which the menses after having ceased eight days were suddenly restored. The organs of generation were found inflamed.

85. *Guy's Hospital Reports*, 1866, 3rd series, vol. xii, p. 344.

By Dr. A. S. Taylor.

Some persons who drank wine containing *Arsenic* were seized with faintness, nausea, and vomiting.

86. *Guy's Hospital Reports*, 1860, 3rd series, vol. vi, p. 402.

Experiments by Dr. Pavy, reported by Dr. A. S. Taylor.

Half ounce of *Fowler's solution* (equal to two grains of *Arsenious acid*) were injected into the jugular vein of a dog. It vomited almost immediately, and died in eighteen hours. Mucous membrane of stomach and intestines was found intensely injected, in fact, in a state of acute gastro-enteritis, chiefly marked from stomach to cæcum.

87. *Guy's Hospital Reports*, 1842, vol. vii, p. 341.

By Dr. John Hilton.

A man, æt. 35, took more than a quarter of an ounce of *Arsenic* at 5 p.m. Next day, at 1 a.m., he was in a state of collapse, and approaching insensibility, and complained of great pain on pressure over region of stomach. He sank progressively till he died at 2.45 a.m.

Post mortem in ten hours.—Countenance calm and placid; gums unusually pale, almost white; no lividity of lips; cadaveric muscular rigidity well marked. *Heart* not much distended with blood. Lining membrane of trachea and larger bronchi much congested with dark blood, and some of the smaller tubes contained a tenacious muco-purulent fluid; pulmonary tissue rather congested with fluid blood. In parietes of stomach were some dark congested veins. The external part of small intestines, especially the ileum, was pinkish, apparently from injection; the intestine was flaccid, and had a peculiar translucent appearance. *Stomach* was firm and capacious, and contained about a pint of dark-brown mucous fluid; after allowing it to flow away, there was a large quantity of semi-transparent, glairy, adhesive mucus covering the internal surface of stomach, particularly along the smaller curvature towards the pylorus. The mucous membrane was a beautiful rich red colour (from inflammation); most at the pyloric extremity. The whole surface of the mucous membrane, except a small portion near œsophagus, was corrugated and raised into ridges, and the summits of these were most minutely injected

with blood; while the intermediate sulci were comparatively free from colour. The ridges had a zig-zag, curved, or wavy arrangement, with a general direction from œsophagus to pylorus. The mucous membrane was firm; and the whole parietes of stomach, particularly the right half, appeared contracted and fleshy. No inflammation in œsophagus. The exterior of the upper third of duodenum was coloured by transudation of bile; the interior was a good deal inflamed. The whole length of the intestines contained a good deal of flaky mucus, but less and less from above downwards. Bladder firmly contracted, and did not contain a drop of urine; its internal surface presented numerous small diffused red patches from inflammation, some of which resembled small red ecchymoses; there was also marked diffused vascular congestion surrounding the termination of the ureters.

88. *Guy's Hospital Reports*, 1841, vol. vi, p. 21.

By Dr. A. S. Taylor.

Reference to *Annales d'Hygiène*, 1837, vol. i, p. 350; *British and Foreign Med. Review*, Oct., 1839, p. 568; Orfila's *Mémoires sur l'Empoisonnement*, *Mém. de l'Académie Royale de Médecine*, tome viii, 1840.

A child took one third of a grain of *Arsenic* in wine. In twenty minutes it became sick, vomited severely for three hours, then recovered.

A lady, æt. 32, took one and a half grains. In thirty to forty minutes she felt generally uneasy, vomited violently for four hours, and recovered.

A man, æt. 40, took two and a half grains. In twenty minutes he felt unwell and took some brandy; vomiting came on and lasted three hours; he did not entirely recover for several days.

Case referred to from *Edinburgh Medical and Surgical Journal*, vol. iii, p. 67.

89. *Guy's Hospital Reports*, 1841, vol. vi, p. 265.

By Dr. A. S. Taylor.

A fatal case of poisoning.

Post mortem.—Mucous membrane of stomach dull red, the redness being specially marked in the interspace between cardia and pylorus. In the lesser curvature between these openings there were three rather elevated lines, consisting of firmly adhering mucus,

intermixed with a white substance having a streaky character like cream poured on a dark surface. These lines had a border of deep redness which became gradually shaded off into the surrounding mucous membrane. On removing the mucus the stomach presented a deep cinnabar-red colour. There were several small patches of ulceration about this part of the viscera; and near the cardiac orifice were two ulcers, almost circular, and each about the size of a sixpence. The ulcers were covered with a white powder, and on removing it the exposed surface appeared red and ulcerated, surrounded by effused dark blood, the effusion extending for some distance around. The rugæ of stomach were numerous and highly inflamed at margins, and between their folds blood and mucus were abundantly effused. The mucous membrane at the greater curvature was less inflamed than at the other parts. The stomach, when first opened, contained about six ounces of a yellowish fluid, with large white coagula floating in it, which were bloody from the draining of the blood-vessels, as well as from admixture with the coagula effused in the organ. There was, in addition, a large quantity of firm mucus in small detached masses. *Abdomen* appeared contracted as if from fasting. *Omentum* was highly congested and inflamed. *Small intestines* very much inflamed, and of a vermilion-red throughout their whole extent, but this gradually diminished in intensity from the duodenum downwards. There was hernia of one part of small intestines. Mucous membrane of rectum slightly red. Lower portion of œsophagus, within a short distance of cardia, was slightly reddened.

90. *London Medical and Surgical Journal*, 1831, vol. vi, p. 508.

Symptoms of *Arsenical* poisoning by Dr. Ryan.

The first symptoms are sickness and faintness, which generally commence in fifteen minutes. In a few minutes after the sickness there is intense burning pain in stomach, greatly aggravated by pressure. Retching and vomiting ensue, especially when drink is taken; often sense of dryness, heat, and tightness in throat, exciting a desire to drink. Powers of swallowing and speech greatly diminished, and often a sense of suffocation. The fluid vomited is yellow and green and sometimes streaked with blood. Sometimes diarrhoea, or sense of burning heat, or actual

inflammation along the digestive canal from mouth to anus. The genito-urinary organs of both sexes may be irritated or inflamed, and their functions deranged. In consequence of the intense pain or inflammation of stomach and bowels the diaphragm cannot act freely, and the breathing is more or less impeded. There are convulsive twitchings of the trunk and extremities; violent cramps of the legs; pulse small and soon imperceptible; extremities cold, clammy, and livid; countenance pale and sunken; tongue and mouth dry, and often covered with white ulcers or aphthæ; delirium supervenes, followed by death, either calmly or in convulsions. If he survives for days or weeks the body may be covered with eruptions of various kinds, sometimes resembling smallpox, petechiæ, miliaria, &c. Sometimes a remission of all symptoms occurs on the second day: but this is delusive, as all the bad symptoms usually return with increased force.

Dr. Yelloly's case briefly quoted: see below.

In some cases where the patient dies in four to six hours there is faintness amounting to syncope, stupor, coma, or convulsions. Nervous symptoms may supervene, as coma, palsy of arms or legs, hysteria, or mania. Delirium or tetanus may be produced.

91. *London Medical and Surgical Journal*, 1831, vol. vii, p. 429.

Fristo's cases from *American Journal of Med. Sciences*: see below.

92. *London Medical and Surgical Journal*, 1835, New Series, vol. vi, p. 639.

By Dr. Storrey.

A man ate a cake containing *Arsenic* (at Leeds). It caused constriction of the throat; violent vomiting and purging, with other distressing symptoms which were at first considered those of cholera.

93. *Lancet*, 1866, vol. ii, p. 337.

Editorial account of poisoning at Ponteland, near Newcastle-on-Tyne, from a paper read by Dr. Dodd; further accounts

given in *Lancet*, 1866, vol. i, pp. 583 and 498; but the latter reference contains nothing new.

Among the patients were John B—, æt. 52; William B—, æt. 49; George B—, æt. 43; a nephew; a housekeeper (E. R—); and a female servant (J. W—). All these except one were affected by a similar group of symptoms, viz. a peculiar white fur on the tongue, the fur not being very thick, but intensely white; conjunctivæ of eyes highly congested. Tingling and numbness of feet and hands amounting to paralysis, especially of lower limbs. The three eldest men died of these symptoms within six weeks. Several of the others affected continue more or less paralysed, but are alive.

December 23rd.—W. B— said that, two days before, his brothers, two servants, and himself were taken with vomiting, without much pain, but a good deal of languor and slight headache, and a little tenderness over epigastrium. The vomiting was still going on four or five times a day. Skin rather hotter than usual; pulse 80, full and soft; tongue moist, but covered with a peculiar white fur; it looked as if he had been licking *Magn. carb.*; the coating was not very thick, but intensely white. Vessels of conjunctiva highly congested. He said all the others were similarly affected.

24th.—All felt a little better. Vomiting not so frequent; skin rather dry, hotter than usual; pulse about 80, soft and full; bowels relieved by the medicine, stools green; vomited matter green and bitter. This group of symptoms was constantly recurring or occurring to persons on the farm. For a few days they would subside and almost disappear, and then they would break out with a fresh severity, and again subside.

27th.—Messrs. B— rather better. W. B— begins to complain of tingling and numbness of feet and hands.

29th.—All better except W. B—, who complains of the paralytic symptoms getting worse.

30th.—All better except W. B—. Housekeeper also complains of hands and feet.

January 1st.—W. B— was downstairs, fully dressed, and said were it not for the numbness of legs, which were nearly useless, he should be almost well. Slight headache. Tongue more furred. No vomiting for four days.

3rd.—W. B— died. G. B— was in bed, with the same

symptoms as the rest, and a sore throat. Fauces red and swollen; tonsils enlarged; a small slough on end of uvula, and also on tonsil. Excited, feverish, and perspiring; pulse quick and irregular; numbness in hands and feet; eyes and tongue as in the other cases. The maid who was quite well on December 30th had a return of all the symptoms and a sore throat.

5th.—G. B— died at 6 p.m.

5th.—J. B— had increasing numbness of extremities, and legs were swollen.

6th to 15th.—General improvement, except in the paralytic symptoms.

18th.—All patients much worse, a relapse having set in yesterday afternoon; vomiting was as before the leading symptom; skin hot and flushed, with a peculiar hue on it. J. B— was very nervous, excited, and feverish; pulse 100, soft and weak. When he tried to move his breathing became hurried and laborious, with frequent sighing.

20th.—Rather better; vomiting ceased in two cases.

21st.—Improving. Maid left very weak, this being her third attack, and complaining of her legs.

22nd.—Yesterday symptoms of a fresh outbreak appear on every one except the boy; three labourers, Mrs. B—, and a manservant, all feel more or less affected.

26th.—All better. J. B—'s paralytic symptoms the same.

February 4th.—J. B—, Mrs. B—, the housekeeper, and nephew, were all vomiting again this morning, and showed all the former symptoms in a greater or less degree. J. B— lay in bed perfectly helpless as to hands and feet, with an anxious expression of face; skin hot and perspiring freely; pulse soft and weak, about 90; frequent sighing; and tongue coated with white fur.

6th.—Not so well. J. B— sinking. Boy has sore throat, with all the usual symptoms in a minor degree.

8th.—J. B— sinking fast. Skin covered with a cold clammy sweat; pulse 120; very weak; vomits at frequent intervals dark-green, bitter mucus and bile; had wandered a good deal.

9th.—J. B— died at 2 a.m.

Post mortem of J. B—.—Cuticle in some parts appeared in a state of desquamation as after scarlatina. Inferior portion of both lungs congested. Each pleural sac contained eight ounces

of bloody serum. Rugæ of stomach obliterated. At cardiac extremity mucous membrane was inflamed in patches, of a brownish-red colour, and thickened; towards pylorus, and especially along greater curvature, the colour was a dark brown, and the membrane almost wanting.

Several patients who survive have more or less paralysis of limbs, especially the housekeeper and Mrs. B—.

Arsenic was found in the body of J. B—.

Additional cases from *Lancet*, 1866, vol. i, p. 583.

J. W— (the female servant mentioned before) had much vomiting, with thirst; she had numbness and pricking pains in limbs. Another boy who took some food there was very sick, with pain in stomach, and vomited green matter, and was purged. Mrs. A— had vomiting. J. F— felt unwell, with pain and sense of fulness at stomach; was purged, and had numbness and uneasiness in right arm and leg. J. S— had pain in stomach, vomited bitter green matter, and had loose and bloody stools; great thirst; numbness in right hand and foot.

94. *Lancet*, 1862, vol. i, p. 325.

By Dr. Wilks.

A man, æt. 36, took $\frac{1}{4}$ oz. of *Arsenic*. He had the usual symptoms, vomiting, purging, pains in abdomen, &c. He died in twelve hours.

Post mortem in six hours.—Lungs congested, with one or two purpuric spots on surface. Blood quite fluid in both sides of heart. Endocardium of left ventricle was ecchymosed to about half of the surface. There was a large purple patch on the septum, another close beneath the mitral valve, and the muscular columns of the valves were themselves spotted. The abdomen presented on its peritoneal aspect a slight rosy tint, especially on small intestines. These were not distended, as they contained no air, but lay together in a mass wherever placed. The serous surface was not perfectly glistening, but slightly opaque, and felt sticky to the touch; also a little secretion could be scraped off. The stomach was full of yellow fluid like the yolk of egg. The mucous membrane was most acutely inflamed at pyloric end, whilst at the cardiac there was scarcely a trace of redness. At this end one or two prominent rugæ were of a red colour, and this was the only indication of inflammation.

At the pyloric end the surface was of a deep-red colour uniformly so far as the valve. In the midst of this red part was a white patch, partly adherent. This at first seemed like a portion of sloughy mucous membrane, but on closer examination it appeared to be merely a mass of lymph or inspissated mucus, in which some *Arsenic* was entangled. The small intestine was rather contracted, the walls soft, and pinkish externally; the mucous membrane internally was mostly white, and had a sodden appearance. A very large quantity of mucus was found covering the surface, and in many parts firmly adherent. At various places the mucous membrane was bright red. The end of the ileum was much contracted, and the mucous membrane in folds. The solitary glands were not visible, and Peyer's not more marked than usual. The colon was remarkably contracted, only barely admitting the point of the enterotome; it was quite empty, and showed no trace of inflammation. Numerous white specks were seen in the intestinal contents; they were not gritty, and thus doubtfully *Arsenic*.

95. *Lancet*, 1862, vol. i, p. 499.

By Dr. G. Selwyn Morris.

Effects of green *Arsenical* paper on children. Irritable stomach, irritation of bowels, loss of appetite, and deadly paleness of face.

96. *Lancet*, 1862, vol. i, p. 598.

Effects of *Arsenical* paper; by Dr. Walter Fergus.

1. Three boys, the eldest under five, had similar symptoms; pining and miserable, fretful, and capricious about their food.

2. A man had weakness, felt oppressed by his work, sleeping heavily, but not refreshed. Pulse weak; tongue indicated a state of irritation; there were also signs of irritation in fauces.

97. *Lancet*, 1862, vol. ii, p. 516.

By Dr. Thomas Orton. Poisonings by *Arsenical* green paper.

1. A child, æt. 2 years 8 months. April 3rd.—Had had diphtheria [? effects of *Arsenic*, E. W. B.], but it had now quite left the child. Child was sitting on a chair in a listless state, pale, slight colour over cheek-bone, lustrous glistening eyes,

palpebral conjunctiva red, and all the appearance of a child which had been crying. The head was on one side, and pain was felt on raising it as from a rheumatic affection of the sterno-mastoid. Pain over umbilicus and epigastrium at times; mouth and gums of a preternaturally bright colour, full of saliva as from mercury; very slight ulceration on edge of tongue.

At the inquest on the death of the child (three others had also died) the mother gave the following additional symptoms; weakness; head on one side as it fell down, could not get it up. Nostrils sore and dark; child rubbed and picked them; eyes watered much; complained of stomach, arms, and legs. The mother had smarting of eyes; also numbness and kind of cramp in arms and legs, and pain in side. Her husband had pain in chest; after his work he felt over-tired; did not sleep so well as before. When stripping the room of the paper the mother felt a heavy, queer sensation in the throat.

Post mortem.—Stomach had several streaks of inflammation therein; bowels slightly inflamed; mesentery congested and inflamed, of a bright vermilion colour; mucous membrane thickened, readily rubbed off.

The mother had daily headache over brows for four months; it went away one week after the paper was removed.

2. A young woman had been ill for ten weeks; had headache; pain over brows; smarting of eyes; defective sight; irritation of nostrils and upper lip; mouth and gums tender; all teeth aching; throat dry; pain at pit of stomach, sometimes very severe; short, dry, hacking cough; breathing short; general tremor; great prostration; loss of appetite. Had not rested well for weeks; symptoms always worse in morning, especially the running of eyes and headache. Within these few weeks she had become almost blind; could not see at all without wearing spectacles. On removing the paper she soon recovered.

3. A servant and children had constant burning in throat and pit of stomach, and great thirst at night. The eldest child, æt. 12, had been ill for some time with short breath, great thirst, and an oppressive feeling at night; and she always would have her bedroom door open. All recovered when the paper was removed.

Other cases mentioned, but no symptoms given.

98. *London Medical and Surgical Journal*, 1828, vol. i, p. 189.
Editorial.—Salivation very frequently is caused by *Arsenic*.

99. *London Medical and Surgical Journal*, 1837-8, vol. i, p. 354.

Dr. Taylor's case. See above.

100. *London Medical and Surgical Journal*, 1837-8, vol. i, p. 769.

Dr. Von Specz's cases from *British and Foreign Medical Quarterly Review*: see below.

101. *Guy's Hospital Reports*, 1845, vol. iii, p. 187. By Dr. A. S. Taylor.

A child, $\text{æt. } 8\frac{1}{4}$ years, killed by *Arsenic*. Complained of pain in belly, and was sick next day, and brought up something like water; died on third day. There was great thirst on the second day. Another child also died two weeks afterwards. There were marks of inflammation in stomach and bowels. *Arsenic* was found in contents of stomach. A *post mortem* of the first child was then made, twenty-eight days after burial. Stomach and bowels in this case also showed marks of inflammation: internal surface of stomach was inflamed and ulcerated: the viscera presented patches of a deep red colour externally, especially the duodenum. On opening the stomach a quantity of pus escaped, and about two drachms of a reddish-coloured thick liquid was drained from it. The central portion of the mucous membrane was greenish brown, but at the cardiac and pyloric ends it was of a deep cinnabar hue, especially at the cardiac extremity, and along the greater curvature; at the pylorus the mucous membrane was rather pale, so as to form a distinct boundary between that organ and the duodenum. About an inch above the greater curvature and near the cardiac extremity was a long irregularly oval patch on the mucous membrane, of a deep mustard-yellow colour, about an inch in length, and less than half an inch in width. In and about this spot the mucous membrane was ulcerated. By slight friction it was readily detached in layers of a yellow colour. *Duodenum*.—The mucous membrane was deep red, and the mucous glands con-

siderably enlarged. *Small intestines* presented patches of redness through part of their course. Rectum unusually pale.

102. *Guy's Hospital Reports*, 1846, vol. iv, p. 458. By Dr. A. S. Taylor.

A woman, æt. 22, poisoned herself with *Arsenic* to cause abortion. She complained of sudden indisposition and retired to her bedroom. Soon she had violent vomiting and diarrhœa, which continued incessantly, with intense thirst, severe pain, and sense of burning heat in stomach, accompanied with spasms especially in the muscles of lower extremities. This was at noon. At 7 p.m. she was in a state of collapse and died in half an hour. It was at first suspected to be a severe case of English cholera.

Post mortem.—Stomach somewhat red externally, and its vessels congested. Internally the whole of the mucous membrane was inflamed, of a red-brown colour, but passing into a much deeper red tint at the cardiac and pyloric extremities. The surface was covered in places by a curdled mucous liquid, mixed with blood. The mucous glands were enlarged. The lining membrane of duodenum was entirely inflamed, and this inflammation extended through the whole of the small intestines to the cæcum, but in a less degree. Intestines contained a large quantity of watery liquid mixed with blood and mucus. Cæcum contained a large quantity of blood and mucus in flakes.

103. *Guy's Hospital Reports*, 1855, 3rd series, vol. i, p. 364. By Dr. Wilks.

A man, æt. 50, took some *Arsenic* (probably three teaspoonfuls) apparently about 10 a.m. After some hours was very ill with vomiting and purging; at 3.30 p.m. he was almost in a state of collapse; skin cold and slightly livid; pulse imperceptible; heart's action quick and faltering. After the fatigue of moving him had passed off he was able to speak and seemed quite sensible, but never recovered from the collapse. He swallowed what was given him willingly though with difficulty, but ejected a large portion again almost immediately. The matters vomited were pinkish, and the stools a white curdy fluid. Soon after this he became very restless, and attempted to get out of bed, and when restrained rolled from side to side as if in great

agony. He then exclaimed that the cramp had attacked his legs and stomach, and on examination it was found that the muscles of the former were spasmodically contracted, and the abdomen was also rigid and tender. In the intervals of the paroxysm of the pain he lay with his eyes half closed; tongue covered with a creamy fur. The breathing soon became more rapid and rather difficult, and accompanied by an increasing lividity of face. The spasms continued, but never attained to anything like general convulsions. There was no disposition to coma except that arising from exhaustion, and he was able to recognise his friends until a quarter of an hour of his death. He passed no urine while in the hospital (since 8.30 p.m.). He died three and a half hours after his admission and nine after the poison.

Post mortem in twenty hours. Purple cadaveric patches on various parts of trunk and limbs, which gave a general dark colour to the body. *Dura mater* much more adherent than natural. Lungs contained much blood; the bronchial membrane was throughout of a bright pink, chiefly from vascular injection. Right auricle full of blood, chiefly fluid and dark, a colour intermediate between that of arterial and venous, and a part had coagulated into a small pink fibrinous clot. Right ventricle contained a little fluid blood of the same character; the left auricle and ventricle were comparatively empty, containing only a few drachms of dark fluid blood; the endocardium of left ventricle, just beneath the aortic valves, had three ecchymosed patches upon it, each about the size of a four-penny piece; a similar ecchymosis, of a red colour, existed around the coronary vein in the right auricle; muscular walls of heart very flabby. *Intestines* had a sodden or doughy appearance and feel, so that they could be moulded or placed in any position, without their elasticity altering their position; they lay closely coiled together, and appeared to contain but little air. It was to this circumstance and to their being filled with fluid that their peculiarity was due. They were pinkish white, *i. e.* a groundwork of dead white covered with pink vascular injection; they also felt slightly viscid to the finger. *Duodenum* slightly more pink than natural. *Stomach* contained a pint of reddish-brown fluid, the colour evidently due to blood; this fluid was limpid, held but little mucus. On the internal surface, and adherent to it, were a few white grains surrounded by some tenacious mucus.

The whole mucous membrane was intensely inflamed, being bright red and highly injected. The mucous membrane was throughout pale, with the exception of a few pink patches in various places, especially at lower part of ileum and sigmoid flexure of colon. *Liver* contained a good deal of blood; the texture soft and very lacerable. *Spleen* very soft and full of blood. *Kidneys* flabby and pale. *Bladder* firmly contracted; contained two drachms of opaque urine.

104. *Guy's Hospital Reports*, 1864, 3rd series, vol. x, pp. 220—236. By Dr. A. S. Taylor.

A girl died from ointment containing *Arsenic* and *Precipitate*. [Omitted as doubtful, E. W. B.]

Cases quoted from paper by M. Friso, in *Annales d'Hygiène*, 1880, vol. ii, p. 441. Three children had *Arsenical* ointment applied to scalp for *tinea capitis*. After some hours the children had convulsions and severe pain in bowels. The youngest died after violent vomiting and convulsions. The two others died afterwards with similar symptoms in two days. The heads of two presented after death large ulcerated surfaces, covered with a greasy yellowish-red colour. The principal *post-mortem* appearances in the girl were infiltration and thickening of the cellular tissue of the scalp; the membranes and substance of the brain were much injected, and serum was effused in the ventricles. Stomach was inflamed and presented ecchymosed spots, and the duodenum and other parts of small intestines presented a similar appearance. In the boy the appearances were similar.

McCready's case quoted, see below.

A trial took place at Chester Assizes in 1844 for the death of a woman by the application of *Arsenic* to a cancer of the breast. The gullet, stomach, and the intestines were found extensively inflamed.

M. Flandin mentions the case of a woman who was killed by one application of *Arsenic* to a cancer of the breast (*Flandin*, i, 502). The poison began to operate in ten hours; death took place in six days and the urine was suppressed throughout. The mucous membrane of duodenum was slightly swollen or thickened.

Cases by MM. Bayard and Chevallier in *Annales d'Hygiène*, 1846, vol. ii, p. 131. On November 22nd incisions were made in the breast of a woman and *Arsenic* introduced, for the cure of a

cancer thereof. In a few hours she had a shivering fit and felt generally unwell. At night severe febrile symptoms set in, with copious and frequent vomiting of greenish bilious liquid. On 23rd the vomiting continued, bloody stools were passed, the febrile symptoms were unabated, and there was a tendency to drowsiness. These lasted more or less till the 28th, when there was difficult breathing, great prostration of strength, pains in chest, throat, and abdomen, with delirium. Eyes strongly injected with disturbed vision. Vomiting had ceased, no purging, and abdomen not painful on pressure. Intellect not always clear. On 29th passed a restless night; no vomiting, but much purging of liquid stools. Pulse 132 and small. Petechial spots appeared over the skin of trunk and thighs. Very little urine was passed, and there was no perspiration. Died at 6 p.m., seven days after the poison.

Post mortem.—Mucous membrane of large intestines had an inflammatory redness. Liver, spleen, pancreas, and kidneys were congested. Heart soft and flabby, ecchymosed appearance in tissue of right ventricle, and the lining membrane was very red and friable, an appearance which has since been observed by Dr. Wilks in a case of acute *Arsenical* poisoning. Blood was liquid and black.

Bayard and Chevallier have reported another case in which an *Arsenical* plaster was applied to the breast of a woman (*Annales d'Hygiène*, 1864, vol. ii, p. 152). After twelve hours she had nausea, vomiting, and bloody stools. Next day burning heat in throat, great thirst, and delirium. The symptoms lasted more or less for five days, when she died.

Post mortem, nineteen days after burial.—*Heart* contained dark blood. Perforation of *jejunum*. *Stomach* contained a bilious mucus. Lining membrane of *duodenum* had a reddish tint, and the mucous fluid which covered it was slightly tinged with blood.

105. *Association Medical Journal*, 1858, p. 878. By Dr. Thomas Brown.

A woman, æt. 24, took *Arsenic* to procure abortion, which it did. On October 19th she had pain and vomiting, the latter continued on her arrival home, where she was delivered prematurely. On 21st she was delirious and unconscious, with a

cadaverous countenance, and feeble rapid pulse. Abdomen tender on pressure, and somewhat distended; urgent thirst, and constant jactitation. Died in seven hours from the time she was seen professionally on the 21st, and child died in two hours more.

Post mortem.—Near the pylorus there was erosion or ulceration of mucous membrane, with a well-defined line of demarcation.

106. *Lancet*, 1873, vol. i, p. 174.

Extract from Kittel's paper in January No. of *Allg. Wiener Med. Zeitung*, on an epidemic of conjunctivitis due to *Schweinfurt's Green*.

Several girls who worked with it were affected. It generally began with an intense pain in the eyes and photophobia. Acute catarrh then followed, accompanied by redness and desquamation of internal surface of eyelids. In some cases there was to be seen on the papillary body of the lower lid a small round greyish patch which stuck to the surface, and on being removed caused slight hæmorrhage. The conjunctiva of the upper eyelid never presented this appearance. The inflammatory process caused some thickening of the conjunctiva, and consequently some swelling of the lid. There generally existed at the same time various inflammatory lesions round *aloe nasi*.

107. *Guy's Hospital Reports*, 1851, 2nd series, vol. i, pp. 188—206. By Dr. A. S. Taylor.

1. A woman, æt. 27, took a teaspoonful of *Arsenic* about 8 a.m. She died between 10 and 11 a.m. At 9.30 she was in a state of collapse, pulse imperceptible; had been sick and purged several times. *Peroxide of Iron* was given by the stomach-pump, but during the operation syncope came on, and she died in a few minutes.

Post mortem.—Whole surface of body pallid and slightly cedematous. *Small intestines* externally were very vascular. *Liver* greatly enlarged, extending to within four fingers' breadth of pelvis, and had the appearance of a "nutmeg liver." *Internal surface of stomach* presented several red patches, especially towards pylorus. *Œsophagus* internally was very red in several places. *Lungs* congested.

2. Case reported by Dr. Greaves.

Mrs. — took *Arsenic*; she had sickness and diarrhoea, &c. at 2.30 p.m., and died at 7.15 p.m.

Post mortem.—A large quantity of *Arsenic* in the stomach, mixed with a considerable portion of very viscid mucus, almost as tough as birdlime.

3. Case reported by Dr. G. H. King.

A man, æt. 21, took a large amount of *Arsenic* between 10 p.m. and 1 a.m. Vomited several times. Towards morning thirst and diarrhoea; cramps in legs in forenoon; also prostration. At 2 p.m. dull, semi-narcotised, skin very cool and damp. Cornea hazy; conjunctiva much injected; pulse very frequent and feeble; abdominal muscles tense, outline distinct; firm pressure excited a *little* pain in right hypochondrium; tongue had a dryish coffee-brown colouring; during afternoon had painful cramps of legs, vomiting, and thirst. The vomited matters were a brownish watery fluid, which became green on standing. He died eighty-one hours after the poison. He had throughout the same dull heavy look; thirst abated latterly; a little night-delirium. Tongue changed its brown colouring for an inky one, the substance of the organ being injected, a narrow side edge being uncoated. At first talking caused pain to shoot upwards on sides of the thorax. Bowels open twice; urine scanty. Pulse generally 120, feeble, small. Vomiting ceased after first day.

Post mortem in twenty-seven hours.—General rigidity. Patches of ecchymoses over thorax. *Pericardium* contained a little serum. *Pleura* over upper half of left lung, moderately adherent. *Stomach* distended, projecting on division of abdominal walls; containing about 12 oz. of a watery brown fluid, with a few shreds of opaque mucus. Interior of *œsophagus* studded with capillary injection; longitudinal vessels distinct; line of epithelium very well marked at entrance to cardia. Mucous membrane of left half of stomach was uninjected, except some lateral patches of capillary injection, with specks of extravasation. The membrane was of a canary-yellow colour, with the pits of the entrance of the follicles very distinct. Mucous membrane of pyloric half very much corrugated, moderately congested; the sides and upper half were studded with a minute stellated capillary injection, with points of extravasation; there was apparently one small black slough, 6 lines by 2, the thick-

ness of the membrane, three inches from the pylorus, in the line of and opposite to the attachment of the greater omentum. On the removal of the slough it had the appearance of a blood-stain, nearer the pylorus. Here was a much larger, but more superficial loss of substance, coloured yellow. *Small intestines* moderately full of a gelatinous brown fluid, of some consistency, but homogeneous. The mucous membrane was generally but variably injected; the corrugations were profusely injected, in some places approaching to a velvety appearance, the interspaces less so; the *jejunum* was the most partially injected; this fine capillary injection existed in the small intestines to nearly the same extent as far as the ileo-cæcal valve. *Large intestines* contained a large quantity of a very dark-green fluid, of a muddy consistency, but not gelatinous; the mucous membrane was rather vascular. In the horizontal portion of *rectum* there was a superficial slough, the size of a finger-nail. *Kidneys* large and turgid; the lining membrane of the *pelvæ* vascular, with some fine injections and many minute bloody points; the *pelvæ* of the organ contained a little purulent-looking fluid. *Bladder* contained a tablespoonful of a purulent fluid; its lining membrane at lower part was most intensely injected, of a vivid red colour, appearing like a very red patch, extending to the mucous surface of the prostate, which was also very vascular.

4. A man, æt. 19, took half a teaspoonful of *Arsenic* at 10.30 a.m. In half an hour after the poison he had nausea followed by very severe vomiting, and an intense burning pain in epigastrium, all which continued till he was admitted at 3 p.m.

3 p.m.—Did not complain of much stomach pain. Was drowsy and depressed, with tremors of the limbs, and pallid countenance; pulse 140 and very feeble; skin moist; extremities cold. Emetics of *Sulphate of Zinc* were given, and *Peroxide of Iron*.

7.30 p.m.—Severe pain at pit of stomach. Took one grain of *Opium*.

8 p.m.—Pain continues; repeat *Opium*. There was considerable pain at pit of stomach, increased by pressure, and he complained of excessive thirst and a dry heat in throat. Seemed dull and drowsy; pulse 120; bowels had been moved.

2nd day, 11.30 a.m.—Drowsy; pulse 100, feeble. Aching pain at lower part of belly; not much pain in epigastrium, even on pressure.

1.30 p.m.—Pulse 108, feeble; pupils contracted; peculiar vermilion redness of lips, with inflammation of conjunctivæ and suffusion of eyes.

9 p.m.—Pulse 106, weak and small; considerable pain in epigastrium.

3rd day, 10 a.m.—Pulse 128, weak and small; had slept well; rather hoarse; very little pain in stomach; had passed by stool during night a quantity of dark, almost black, matter; the colour probably due to the *Iron*.

Noon.—Had passed another black stool.

4th day, 9 a.m.—Pulse 94 and very weak; scarcely any pain in belly; tongue coated with a white fur at base and middle, but morbidly red at tip and edges. Conjunctivæ still inflamed, and eyes suffused.

5th day, 10 a.m.—Pulse 108, rather fuller, and with some degree of sharpness in its beat; scabs had formed about the lips; conjunctivæ inflamed, and eyelids glued together by their secretion; tongue white at centre, and very red at tip and edges; pain at pit of stomach very slight. Two dark stools since yesterday.

6th day, 11 a.m.—Pulse 104, rather sharp; pain in stomach-pit, and aching at bottom of belly. Since noon yesterday purging had come on; passed three stools yesterday afternoon, and was up three times in night; the stools smelled like stale meat; they consisted of a bile-like fluid, and floating in this were little masses of clear colourless gelatinous matter, and also small portions of a dull slate-coloured substance, which was probably altered blood. Passed a restless night, and was rather wandering.

8 p.m.—Pulse 108, weak; tongue dull red at tip and edges, and becoming brown in centre. Hands and wrists felt exceedingly cold, but the rest of body was warm. A quiet kind of delirium had come on. Eyes still inflamed; edges of lids stiff with concretions of their thick gummy discharge, and the conjunctivæ over the sclerotic raised in some parts apparently with a pale yellowish fluid, giving it a gelatinous appearance.

9 p.m.—Pulse 112, very weak; hands cold, rest of body warm. Delirium now more decided, and there was a wild wandering look about the eyes.

7th day, 9 a.m.—Had slept but little; burning pain in

stomach ; tongue dry, and dingy red at tip and edges, brown in centre.

9 p.m.—Sinking ; pulse rapid, fluttering, and scarcely to be felt ; breathing laboured ; urine and stools passed involuntarily.

10.30 p.m.—Died.

Post mortem.—Slight purplish discoloration about the inner aspect of upper arm, and about calves of legs. *Scrotum* very much inflamed. Surfaces of *pleurae* marked with ecchymosis, and a quantity of bloody serum in their cavity. *Left lung* in a state of very deep, almost apoplectic congestion ; its substance was firm, and a small quantity of bloody serum could be squeezed out of it. *Bronchial tubes* were discoloured, but probably merely from transudation. *Pericardium* contained about two ounces of transparent serum. *Abdomen* : a little dark-coloured serum in peritoneal cavity ; and *intestines* marked here and there with rose-tinted patches. Surface of *liver* fawn-coloured, mottled with spots of ecchymosis ; internally it was flabby and oedematous, and the lobules were large, coarse, and flabby, with the connecting tissue indistinct. The whole substance of liver was a pale fawn colour. In *gall-bladder* was about one and a half ounces of orange-coloured thick tenacious bile. *Spleen* rather small, but presented nothing else unusual. Lower and posterior parts of *oesophagus* had sloughed for the length of about three inches, and breadth of half an inch. There was a sloughing ulcer, about one inch in diameter, near pylorus, and indeed a great part of the mucous membrane was ragged with superficial ulcerations. About the posterior part and lesser curvature the rugæ were prominent, and were deeply injected, in some cases being bright scarlet, and in others purple.

5. Case by Mr. Martin.

A girl, æt. 20, was seized with sickness, followed by severe pain in stomach, and there was abundant purging of a colourless fluid. She died after nine hours' illness. *Arsenic* was found in the body.

Post mortem after sixteen days.—*Stomach* generally inflamed on its mucous surface ; it presented a dull diffused redness, particularly towards the pyloric extremity and lesser curvature, with a few patches of arborescent injections. The lining membrane was very rugose, and brownish red at cardiac end and along greater curvature. In the central portion the membrane was

slightly softened, and was there covered with a gelatinous-looking mass of mucus holding a brownish-white powder. Patches of this powder were seen on other parts of the stomach, especially towards the pylorus. Beneath the gelatinous layer the lining membrane was of a deeper red colour than in other parts. *Jejunum* and *ileum* presented patches of inflammatory redness on the mucous membrane. The contents of stomach consisted of a bloody-looking liquid, mixed with mucus.

6. By Dr. G. E. Stanger.

A man, æt. 19, took *Arsenic* about 9 a.m. He became very sick and vomited frequently; he got worse, had severe pain in stomach, with sickness; occasionally he vomited blood. At 2 p.m. he was cold and collapsed, pulse very feeble; sensation of coldness at pit of stomach, but no pain. Took castor oil and brandy; bowels purged freely three or four times; stools very offensive. Died at 7 p.m.

Post mortem in twenty-two hours.—*Stomach* much distended with gas; contained three quarters of a pint of bloody-looking fluid, with a good deal of brownish mucus, and two or three soft coagula. The lining membrane was intensely inflamed throughout nearly the whole of its extent, but especially at the cardiac and *pyloric* extremities, at which parts there were various ecchymosed spots. A good deal of dark fluid blood in cavities of heart. *Bladder* contracted and empty.

7 and 8. Two cases by Dr. Beardsley.

A boy, æt. 6, took a teaspoonful of *White Arsenic*. In a very few minutes he was taken ill; vomited; pain at stomach; excessive thirst; cold extremities; pulse quick and feeble.

A girl, æt. 22, took two drachms of *White Arsenic*. She was immediately seized with violent pain in region of stomach; burning heat in throat and syncope. In half an hour after the poison she had cold extremities, very anxious look, pulse quick and hurried, violent pain in stomach and bowels, very much increased on pressure. Both recovered.

9. A woman took *Arsenic*; she survived fifteen hours, having violent vomiting and purging.

108. *Association Medical Journal*, 1854, p. 462.

Case from *Annales d'Hygiène, &c.*, April, 1854.

M. Daudin was poisoned by *Arsenic*. He had dreadful pains

in belly, inappetence, desire to vomit, vomiting, diarrhoea, coldness of extremities, headache, and pains in limbs. He lingered in this state and died.

109. *Association Medical Journal*, 1854, p. 1060.

From *Journal de Chemie Médicale*, July, 1854.

A man applied an *Arsenical* plaster to an ulcer on face. The same day he had general malaise; next day frequent vomiting, violent headache, and abundant loose evacuations. He died after four days of great pain.

Two other cases referred to; see same *Journal* for July and September, 1854.

110. *British Medical Journal*, 1869, vol. i, p. 424.

Dr. Seisser's cases of poisoning of nearly 400 persons at Würzburg, by *Arsenio* in bread; much abridged from *Aerial*, *Intelligenz-Blatt*, 1869, No. 6.

In some of the slighter cases there were severe hepatic [*herpetic*, E. W. B.] eruptions, and chronic vomiting. In the most severe cases, colics, sickness, fainting; with subsequent tremblings and spasms of extremities; hoarseness; tormenting thirst; and for a long time afterwards, affections of the tactile sensation, and weak sight.

111. *Pharmaceutical Journal and Transactions*, 1863, 2nd series, vol. iv, p. 4.

Orton's cases quoted, see above and below.

112. *British Medical Journal*, 1871, vol. ii, pp. 101, 392.

An anonymous paper, but vouched for by the editor.

Reference made to *The Green of the Period* (Routledge, 1869).

Symptoms from *Arsenical* green wall papers on members of his household, in number fourteen. First appeared irritation of the mucous membrane, causing diarrhoea and vomiting, with various other symptoms of severe gastric derangement, resulting in permanent indigestion; also incessant severe cold in the head, which in one case lasted for several years without being touched by any remedy; ulcerated throat with acute inflammation, resembling diphtheria and quinsy; severe spas-

modic cough; spasmodic asthma, bronchitis, and congestion of lungs; soreness of mouth, lips, and tongue, which appeared as if scalded in patches; inflammation of eyes and lids, the conjunctivæ being invariably bright red, in one case threatening absolute loss of sight; congestion and torpidity of the liver, with the various symptoms resulting therefrom; and severe bilious and feverish attacks. There was, in short, irritation of every organ. In many cases, if not in all, the heart's action was weakened, and in some palpitation frequently occurred. There were pains in various parts of the body, especially across the shoulders, down the spine and limbs, also in the joints, which were often stiff and swollen; scaling of the skin and irritating eruptions, relieved only by Turkish baths. The effects on the nervous system were most remarkable; producing a thoroughly shattered condition, great irritability, depression, and tendency to tears, with unusual prostration of strength. These latter symptoms were especially marked in the children, and also in servants who had come to the house in ordinarily good health, and who each became affected by degrees as described. The list also includes giddiness, headache, acute earache, and neuralgia; nose-bleed; frightful dreams; hysterical attacks; faintness; cramps, rigor, and numbness of the limbs; rigid spasms and convulsions. The last symptoms developed in the worst cases were loss of memory and threatenings of paralysis; also spasms with twitchings of the body and limbs. The Turkish baths relieved, being used daily; the brain congestions yielding all the more readily when the temperature was above 140° F. The inveterate nasal catarrh ceased *at once* when the paper was removed, and *before* using the baths.

The above symptoms were greatly relieved after the papers were removed; but in nine months they threatened to return, and it was found that *Arsenical* paper had been again used. The symptoms at once gave way, but being one or two hours in an *Arsenical*-papered room, or wearing articles of dress containing the slightest trace of *Arsenic*, brings them back. Where wall papers contain any *Arsenic* the atmosphere is more or less close and heavy, and no amount of ventilation or cleansing will prevent this. Directly the windows are shut the want of oxygen is perceptible, and some persons therefore find it necessary both to sit and sleep with either door or window open, feeling a want of pure air. I have known cases where *Arsenical* papers so injured the sense of

smell that this closeness was not perceived till the breathing became affected, and then the need of fresh air was seriously felt. Dr. Orton says in the *London Review*, that *Arsenical* papers cause "a simulation of the various forms of diphtheria, ophthalmia, defective sight, nasal irritation, great thirst, short dry cough, asthma, low fever, great prostration, faintness.

113. *British Medical Journal*, 1872, vol. i, p. 10. By Dr. Aveling.

Arsenic sometimes causes inflammation of the genitals.

114. *British Medical Journal*, 1862, vol. ii, p. 448.

Post mortem by Dr. Letheby, on a girl, æt. 14, 'who died from sucking artificial flowers. At the larger end of the stomach there was a chronic ulcer about one third of an inch in diameter, which had pierced entirely through the walls of the stomach. The gall bladder contained a large quantity of bile. The green flowers contained *Arsenite of Copper*.

115. *Guy's Hospital Reports*, 1851, 2nd series, vol. vii, p. 218. By Dr. A. S. Taylor.

A girl, æt. 7, swallowed a slice of cake with some of the *Green ornament*. In a few minutes she began to vomit violently. There was great prostration of strength, pinched and anxious countenance, severe pain in epigastrium, and great thirst; no fluids could be retained on the stomach. She had a choking and burning sensation in the throat, and the tongue was foul. Pulse 120; skin dry and burning. Headache with great somnolency. Eyes red and watery. The symptoms continued with slight intermissions for twenty-four hours. She took some lemonade; the vomiting then ceased, and other symptoms abated. She was convalescent in three days, though the tongue remained foul for a week afterwards. Jaundice has sometimes resulted from this form of poisoning.

116. *Guy's Hospital Reports*, 1865, 3rd series, vol. xi, p. 277. By Dr. A. S. Taylor.

Poisoning of three children by *Arsenic* in vermin powder.

January 4th, 3 a.m.—Visited three children, two boys, æt. 15

and 9, and a girl, *æt.* 6; they had taken the poison at 3 p.m. The two elder children showed little suffering, except unusual thirst, and some slight nausea. Gave *Castor Oil* and milk, and warm water. The boy began to be very sick and thirsty about 5 p.m. (two hours after the poison), vomiting continued during night, and till about 10.30 a.m. on January 5th, when it abated, but it continued more or less till January 6th. When first taken, the boy did not complain of pain, but shortly afterwards he had pain in bowels and stomach, with drawing up of the limbs; the pain ceased about 2.30 a.m. on January 5th. The two elder children, who had taken less poison, began to be ill about 8 p.m. (five hours after the poison), with vomiting, pain in bowels and stomach like the boy, but the symptoms were less severe.

A girl, *æt.* 17, tasted the poison, which caused her tongue immediately to become dry and white.

January 4th, 3 a.m.—The boy appears very ill. Intense vomiting and thirst. Countenance anxious, indicative of the patient having suffered much; dark areolæ round eyes, which are somewhat staring; tongue whitish; pulse quick and somewhat jerky at first; but lowered in power and frequency. Gave mustard poultice to abdomen, with fomentations; castor oil, and warm water and milk. The same with the two elder children. In the boy, vomiting continued during the day; he complained of thirst.

At 11 a.m. is now not sick, and does not complain of thirst. Face less anxious; areolæ round eyes disappearing; tongue whitish but not furred.

6th.—Much improv'd, and was well on 17th.

117. *British Medical Journal*, 1863, vol. ii, p. 357. Poisoning by *Fowler's Solution*. By Dr. Daniel Dougal.

A child aged twenty months, drank 3 drachms, equal to $1\frac{1}{2}$ grains of *Arsenious acid*. Gave at once 12 grains of *Sulphate of Zinc* which caused vomiting. Pulse was very feeble and rapid, skin cold and clammy, face sunk, and drowsiness. Gave *Peroxide of Iron*. Child vomited repeatedly, and had burning over stomach. Gave emetic of *Sulphate of Copper*, and diluent drinks. After this, pulse became stronger, skin got warmer, and the symptoms gradually abated; in a day or two he was almost

well. The child vomited in less than ten minutes after the poison was swallowed.

118. *British Medical Journal*, 1868, vol. ii, p. 435.

Extract from Mr. Simon's *Public Health Reports* on symptoms from *Arsenical Green*. The workmen are subject to irritations, which produce itching, blotches, rawness, and perhaps boils. Dr. Guy found, on visiting one of the larger manufactories where about 100 women are employed in making leaves for artificial flowers, that hardly any of them escaped skin disease. The hands, face, neck, roots of hair, flexure of arms, axilla, and in a most distressing degree the genitals, were affected; the pudendal eruptions being often so severe that they could not bear to sit down. Dr. Guy examined twenty-five of these, and nearly all showed highly developed signs of chronic *Arsenical* poisoning. Their symptoms were excessive thirst, nausea, and loss of appetite, vomiting, pains in stomach, palpitation and shortness of breath, debility, fever, headache, drowsiness, dimness of sight, trembling, nervous twitchings, and convulsions.

119. *British Medical Journal*, 1868, vol. ii, p. 580.

Death from *Arseniretted Hydrogen* in M. Piorry's wards at La Charité: from *Gazette des Hôpitaux*, October 18th, 1868.

A man, æt. 22, imbibed a large amount of the gas at 7 a.m. In about an hour he felt a rather violent pain in the head, which made him open the window for some minutes. He then resumed his work for two hours. At 10.30 he took a meal without perceiving anything particular. An hour afterwards, the headache increased; pain in epigastric region set in; and vomiting of food took place. He was carried to the hospital, during which time he vomited three times. On admission his face and lips were pale; he walked with difficulty; had an intense frontal headache, and very violent pain towards lumbar region; feeling of constriction at base of lung, and breathing was quickened; no cough, no auscultatory *râles*, and sounds of lungs were normal. Much thirst. No pain or tenderness of abdomen; extremities cold. Had sinapisms, frictions, and bottles of hot water; diuretics, acetate of ammonia, and an enema of senna. In about half an hour he became warm, body slightly moist, and breathing more easy; but still complained of general

uneasiness, and especially of pains in loins. The motor power seemed to be unaltered. Pulse 110, sufficiently full and regular. Region of liver was tender. At 5 p.m. passed two abundant fœtid stools, and some time afterwards passed without pain about 220 *grammes* (7 ounces) of red urine in which not a single blood-globule could be discovered. Vomiting of greenish matter was produced by even the smallest quantity of drink. At 10.30 p.m. the headache was more intense and the face animated; conjunctivæ injected; pulse strong and frequent. He spoke with difficulty, and answered questions slowly. He was bled to 500 *grammes*, and was almost immediately *relieved*. The headache and pain in loins diminished. Respiration 20; pulse 95. Vomiting continued, and drink could not be borne.

2nd day.—At 1 a.m. flushed face, hot skin, pulse 100, regular, of tolerable size. No vomiting. Gave large quantities of drinks and simple enemata. A purgative injection at 8 o'clock, after which he had a bath. After this he felt somewhat better, but still very weak. During the day the face was an earthy yellow; skin dry; pulse 104; tongue dry; great thirst, and an air of hebetude. Had not urinated. Pulmonary congestion posteriorly.

3rd day.—Drowsy and apathetic. Conjunctivæ again injected. A marked diminution in the quantity of urine, which was still red.

5th day.—After an apparent but transient improvement the patient's condition became notably worse. Urine was again suppressed; tongue and lips covered with dark sordes; skin had a bronze colour; pulse became imperceptible; breathing quick and laboured; intellect destroyed. Died in evening.

Post mortem.—Congestion of liver without change in hepatic cells; softening of spleen; increase in size of kidneys, with considerable injection, especially in the tubular portions. There was also a peculiar state of the cells, both of the cortical and medullary portions.

120. *Glasgow Medical Journal*, 1858, vol. v, p. 371.

Poisoning by *Arseniuretted Hydrogen*; by Dr. F. Monat.

The gas was inhaled by a Mr. Robertson. He soon had a sense of burning and constriction in the throat. Next day he was exceedingly ill. He had been suffering for several hours

from excessive irritation of stomach, with an intense acrid burning sensation from the pharynx to the lower end of the alimentary canal. The vomited matter consisted at first of the food contained in the stomach, then of bile which had evidently regurgitated into that organ, and ultimately of dark coffee-ground looking matter, which was ascertained to consist of broken-down blood-corpuscles, and the desquamated epithelium of the stomach and lower part of the œsophagus. The bowels had been obstinately constipated and there had been severe pains in the loins, accompanied with the discharge of between three and four pints of bloody urine. There was at this time (about sixteen hours after the poison) considerable fever, with a full hard, frequent, and incompressible pulse, a dry, hot, unperspiring skin, burning pain in the whole course of the alimentary canal, deep-seated pain in the lumbar region, intense restlessness, anxiety, and general uneasiness, pale anxious face, and considerable prostration of the vital powers. He now had eighteen leeches to epigastrium; large doses of *Murray's Fluid Magnesia* with ice, and small draughts of iced soda water; these relieved him, and he was then cupped in the loins, and diluents were freely exhibited. He was now removed; he suffered a good deal in the transit, but a small dose of *Morphia* removed all distress and gave him several hours' rest. As there had been no stool since the poison, and there was a good deal of tenderness in left iliac region, with a sense of weight and dragging in the fundament, he had hot fomentations to abdomen, and an ounce of *Castor Oil* with 15 minims of *Laudanum* on the third day. This caused a tolerably copious clay-coloured motion, with a tubular membranous-looking slough somewhat ragged in appearance, and about four inches in length. This upon being washed and macerated in water was found to consist of a portion of the lining membrane of the rectum, with a large quantity of fibrinous exudation. Similar treatment was continued, with small doses of *Castor Oil* every twenty-four hours; smaller patches of fibrinous exudation were discharged, but the stools continued to be scanty and very deficient in bile. On seventh day he felt very restless and complained of pain in right hypochondrium, worse on pressure or movement. Irritability of stomach, to which he was always liable, came on again, and as there was every indication of an approaching attack of acute hepatitis, he had thirty leeches

over liver, and small doses of *Calomel* and *Soda* every three hours. He was usually morbidly susceptible of the influence of *Mercury*, but on this occasion it did not affect his system. At the end of eighteen hours from the commencement of the hepatic attack he was jaundiced. The *Mercury* was at once discontinued, and diuretics and diluents given. On 22nd day from that on which he was taken ill he was free from distressing symptoms, but considerably reduced. *Arsenic* was detected in the urine. A hæmorrhoidal discharge of nearly thirty years' standing ceased and never returned.

121. *Glasgow Medical Journal*, 1869. New Series, vol. i, p. 56.
By Dr. Thomas Graham.

Arsenical ointment was applied (to cure chronic inflammation) to the breast of a woman, aged 39, the cuticle having been removed. The first application was May 21st, and was immediately followed by severe violent burning in the breast. Violent headache, thirst, sickness, and occasional retching, numbness in arms and legs, sleeplessness, and loss of appetite supervened in a short time. The application was repeated daily till 25th. On this day the pain in the breast became intolerable; there were faintishness and palpitation. The pain was relieved by a poultice, but the constitutional symptoms continued. Inflammatory action extended from the breast to the shoulder and arm. There was no fresh application on 26th. On evening of 26th she had a severe pain in belly, relieved somewhat by a sinapism. She said next morning that she never could survive such another night's suffering. On 27th the points of the sore not sloughing were smeared with ointment. About 2 p.m. she was seized with a kind of fit, with lividity of the face, foaming at the mouth and moaning. She continued unconscious for several minutes; and on regaining consciousness, said she had been in a queer place, that she felt as it were a dart go through her, that she then became insensible, and had no further recollection of what happened to her during the fit. A poultice was applied, and an enema given. In the afternoon she felt more comfortable, took more food, and with greater appetite. Between 9 and 10 p.m. she suddenly said "There it is again," was off in a fit, and died immediately. Thirst had continued to increase during the whole course of the treatment. Palpitation had been persistent from 25th. The bowels had been constipated.

Post mortem.—Left lung congested ; effusion into right pleural cavity, and right lung congested and œdematous. Half an ounce of serous fluid in pericardium. Right ventricle and auricle filled with coagulated blood and a fibrinous clot. Left auricle and ventricle empty. Liver normal in size, but friable, and attached by recent fibrinous bands to the hepatic flexure of the colon. Mucous membrane of cardiac orifice of stomach highly congested and discoloured by extravasation of blood, and the discoloration extended in patches over the greater part of the larger curvature of the stomach. Duodenum, like the stomach, presented numerous ecchymosed patches. Spleen soft and friable. A little subarachnoid effusion.

122. *Edinburgh Medical and Surgical Journal*, 1812, vol. viii, pp. 351-2.

Arsenical poisoning of horses.

This is taken from a work called *The Extraordinary Trial of Daniel Dawson at the Assizes held for the County of Cambridge on Friday, March 12th, 1812, on an indictment charging him with poisoning the Eagle colt, the property of Sir F. Standish, at Newmarket*. Taken in court by George Kent ; 8vo, Newmarket, 1812. The colt was hanging down its head, appeared to have great pain in bowels, and died on following day. Stomach and intestines were found to be considerably inflamed.

123. *Pharmaceutical Journal and Transactions*, 1874, 3rd series, vol. 4, p. 37.

From the *Hampshire Telegraph*.

Two children took some flour containing *White Arsenic* ; both noticed that it was "hot to the taste." They were both ill, and the boy died. Inflammation of the stomach and bowels was found.

124. *Kenealy's Introduction to the Tichborne Trial*, p. 192.

Statement of Pierre Feron.

Roger Tichborne used to take *Arsenic* for spasms. Once he took an overdose, being half tipsy ; he was found raving and foaming at the mouth like a mad dog, and insensible ; the doctor said it was the result of *Arsenical poisoning*.

125. *Edinburgh Medical and Surgical Journal*, 1809, vol. v, p. 389.

By Dr. Yelloly.

A boy, æt. 16, took more than a pennyweight of *White Arsenic* about 10 p.m. Soon afterwards he had vomiting, and soon after this purging; both continued with violence during the whole of the night. He drank large quantities of both warm and cold water. In about four hours he had severe cramp in one of his legs. He had a distressing sensation of cold during the night, which compelled him to use a great quantity of bed-clothes.

Next day, at 10.30 a.m., his pulse was not more than 40 and very languid. Lower extremities were cold, stiff, and without the power of motion; but by the application of warmth the stiffness was in some measure diminished, and the power of motion in some degree restored. The vomiting was kept up by emetics and copious diluents; but the purging ceased about 12, and could not be renewed.

At 3.30 p.m. the extremities were cold, and he seemed unable to move them. He felt great heat in tongue, was very restless, and the pulse was rather more frequent than in the morning. The vomiting had now ceased.

At 5 p.m. he appeared sinking fast; pulse 30 and very languid; upper as well as lower extremities cold and motionless; restlessness increased, and he expressed a great wish for sleep. He died a little before 7 p.m., nearly twenty-one hours after the poison. He had complete possession of his faculties till the last, and was only irritable once or twice when he could not get drink at the moment he wished for it. He said he had no pain in stomach or abdomen. The changes of position which he was continually making a few hours before his death were effected principally by the trunk of the body, the extremities appearing inert.

Post mortem in forty-nine hours. The whole of the small intestines to within three inches of *caput coli* were very much inflamed, and the duodenum and jejunum were a good deal thickened. In some places the external surface was of a florid red, but it was for the most part of a purple hue, and with occasional patches of coagulable lymph. The colon and rectum were smaller than usual. The inner membrane of the stomach, particularly at its lesser curvature, and in the neighbourhood of pylorus, was very much inflamed, and there were in it frequent

appearances of extravasated points of blood. In two or three circular spots, of the size of a shilling, the membrane was abraded, and in one or two places there was a circular thickening (as if by an effusion of coagulable lymph), with some extravasated points of blood upon it. Occasional patches of extravasation in mucous membrane of small intestines. In the mucous membrane of the larger intestines the inflammation was much less, but it extended in some degree to the extremity of the rectum.

Extract from Baillie's *Morbid Anatomy*, p. 138. Dr. Baillie mentions having seen a thin layer of coagulable lymph thrown out upon a portion of the inner surface of the stomach in a case of death by *Arsenic*.

126. *Edinburgh Medical and Surgical Journal*, 1809, vol. v, p. 19.

By Mr. G. N. Hill.

Symptoms announcing disagreement of *Arsenic* are nausea; pain, with sense of contraction of stomach; horripilatio; thirst, with clammy tongue and fauces, increased by drinking any fluids, except milky or oily ones. In children there is nausea, paleness of lips, sleepiness, clamminess of skin, at length vomiting or purging, with great restlessness.

127. *Edinburgh Medical and Surgical Journal*, 1812, vol. viii, p. 221.

Dr. Roget's case referred to. See below.

128. *Edinburgh Medical and Surgical Journal*, 1812, vol. viii, p. 458.

Extract from Benjamin C. Brodie's *Experiments and Observations on the Action of Poisons on the Animal System*; communicated to the Society for the Improvement of Animal Chemistry, and by them to the Royal Society. [Examine original report.—E. W. B.]

129. *Edinburgh Medical and Surgical Journal*, 1819, vol. xv, p. 415.

By Dr. John Astbury.

A man suffering from pain and swelling of left parietal bone, and ulceration of right cervical glands, and other signs of scrofula,

took solution of *Arsenic*, ten drops twice a day. This made him feel sick, and caused vomiting, and made him feel uneasy and unwell all over. In fourteen days his legs began to be painful and swell towards evening, so as to hang over his shoes. The dose was diminished to seven drops twice a day. The legs continued to swell in evening, but were not so painful, and he was free from sickness. The dose was thus increased to ten drops twice a day, and continued for seven weeks. His legs continued to swell in evening during that time. He then took *Guaiacum* and *Sarsaparilla* and sea-baths; the swellings were relieved for the first fortnight at the seaside; then they began to swell every night, and continued to swell for five weeks. When he left the sea he was well, except the swelling of legs. This was on December 22nd.

On December 29th his legs and thighs were very much swollen; the penis anasarcous and very much enlarged; scrotum likewise considerably enlarged; lower part of abdomen hard and œdematous; pulse intermittent; and breathing beginning to be difficult. The author considers these symptoms to be the effect of *Arsenic*, as the kidneys acted naturally, and there was no loss of muscular strength.

180. *Edinburgh Medical and Surgical Journal*, 1819, vol. xv, p. 558.

By Mr. Alexander McLeod.

Three women had eaten some *Arsenic* at 4 p.m. of the 16th of July. They were soon seized with violent retching, vomiting, and excruciating pain in region of stomach. They then drank large and repeated draughts of *Chamomile* infusion, which was continued till they began to vomit blood; they then took a quantity of warm milk, and forty drops of *Laudanum* each. They continued in great distress all the evening and during the night, complaining of heat and excruciating pain in their chests and throats, with sense of stricture in the latter, difficulty of swallowing, violent purging and discharge of blood by anus.

At bedtime they took another dose of *Laudanum*. They were better during night, and at 9 a.m. on 17th they were much easier, but complaining of pain in their chests, with heat and lancinating pain in their throats, profuse perspiration, and general debility. They had great thirst, and pains in teeth. There were purple

petechiæ on their chests and necks. Each took *Castor Oil*, and drank freely of warm milk or barley water.

Towards evening M. M. had symptoms indicative of inflammation of stomach, pulse being 104 and strong; she was bled to 8 oz.; upon which her pulse fell to 94, and she seemed much relieved. To take every hour *Carbonate of Potash* and sublimed *Sulphur*.

18th.—All were better. Repeat medicine every two hours with *Sulphuret of Potash*; the physic to be repeated at night, and plenty of warm milk taken.

Between noon and 1 p.m. all their former symptoms increased in each, almost at the same time, viz., vomiting, purging, excessive pain in their stomachs, heat and pain in their throats, with inflammation and swelling, internally and externally, about the root of their tongues.

About 3 p.m. A. M. lost the power of speech and swallowing, and shortly after her jaws became locked, with convulsive spasms over the rest of the body.

About 3.30 p.m. M. M. had similar symptoms. K. M., about the same time, lost the power of speech and swallowing, though her jaws did not appear locked. They continued in this state during the night, and no medicine could be administered.

19th, 9 a.m.—A. M. was in a state of apoplexy; breathing laborious, with convulsive startings all over body; jaws firmly locked; countenance pale and squalid; pulse 90 and feeble; apparently insensible to external objects. She was removed to a cooler room; had a large blister to stomach-pit, and another below the chin; bled to four ounces from the jugular vein, and gave a strong injection. In about an hour she could move her jaws, when the physic and *Sulphuret of Potash* were again given.

About noon, her face was sprinkled with cold water, which roused her from her comatose state. She spoke at 1 p.m., and complained of a violent headache, with heat and pain in throat. Medicines were continued, and feet immersed in hot water. She continued to recover the whole of this day.

At 9 a.m. of the same day K. M. was found speechless, without the power of swallowing, and with her hand carried constantly towards her throat; face flushed; pulse 104 and full. Was bled from the arm to one ounce, when she said she was relieved. Was

bled seven ounces more; her medicines were repeated, and she continued tolerably easy during the evening, but occasionally complained of headache.

M. M. at 9 a.m. was found speechless, without the power of swallowing, her hand pointing to her throat, with occasional convulsive spasms over body; jaws were fixed, and she smiled frequently; face flushed; pulse 106, strong. Took seven ounces of blood from arm. On the vein being opened, symptoms of hysteria came on, the spasms became stronger, her jaws more firmly fixed, and she smiled continually. These symptoms, however, soon wore off, and she recovered the power of speech and swallowing. The above medicines were given as formerly, and she passed a good night.

20th.—At 9 p.m. A. M. and K. M. were both nearly at the same time seized with violent headache, soon followed by violent delirium, being insensible of their own situation, unmanageable, and not knowing any of their attendants. They listened to what was said to them, but always gave foolish answers to any questions that were asked.

At 4 a.m. of 21st they were in the same state; pulses very feeble. Gave each a dose of *Salts, Blisters* to nape of neck, *Nitre*, gruel, and feet to be placed in warm water. Receiving no benefits after a trial of five hours, cold water was poured several times over the head of K. M. A degree of shivering and gentle hiccough very soon came on, when she recognised all in the room, became calm, and spoke perfectly sensibly. Said she had no pain, but felt giddiness and general languor. Shortly after she fell asleep, and woke quite composed. The same remedy produced the same effect in A. M. M. M., on hearing that the other two were delirious, became so also, though not in so violent a degree. The cold affusions cured her also. They gradually recovered their strength, and remained well.

131. *Edinburgh Medical and Surgical Journal*, 1823, vol. xix, p. 486.

Case by Orfila, from *Archives Général de Méd.*, Feb., 1823.

A man took *Arsenic*. In two or three hours he had vomiting and diarrhoea. The usual symptoms followed, and he died in forty-eight hours.

Post mortem.—The whole body was rigid. Stomach was

internally of a deep red colour, not removed by washing or scraping, and near the duodenum there were several roundish specks, varying in size from a sixpence to a crown piece, of a brownish hue, but whether ecchymoses or eschars could not be determined. The villous coat was swelled there, but not feeble. Duodenum and upper part of jejunum were deep red, and all the other intestines were strongly injected. The left cavities of the heart were of a mottled red colour, and in the ventricle, especially on its *columnæ*, were many small crimson specks, which penetrated into the substance of the parietes. The right cavities had a deep reddish-black colour, and the *columnæ* of the ventricles showed specks like the left ventricle, but less numerous or distinct. *Arsenic* was found adhering to the inside of stomach, though he had vomited incessantly for more than forty hours. In experiments on animals Orfila has found the contractility of the heart destroyed and its tissue often inflamed.

132. *Edinburgh Medical and Surgical Journal*, 1839, vol. li, pp. 335-6.

By Mr. James Blake.

Arsenite of Potash when injected into the veins in the form of a solution containing fifteen grains, was followed by dyspnoea in ten seconds, and the sudden cessation of the heart's action in twenty seconds.

On opening the thorax the right auricle contracted on being irritated, but the left ventricle was insensible even to galvanism. The left side of the heart contained a large quantity of scarlet blood.

A solution of fifteen grains of *Iodide of Arsenic* when injected into the jugular vein of a dog stopped the heart at once. Only the right auricle retained its irritability after death.

133. *Edinburgh Medical and Surgical Journal*, 1845, vol. lxiv, p. 529.

By M. Benoit from *Journal de Pharmacie*, Feb., 1845.

At Montpellier, five men who dissected bodies injected with *Arsenic* had several symptoms of poisoning, such as drowsiness, colic, diarrhoea, and vomiting. All had a severe and continuous lancinating pain at the extremities of fingers. This pain had its chief seat in the bulb of the fingers and the circumference of the

nail. The painful part was visibly swollen, and an appearance like ecchymosis was seen through the nails, which were afterwards cast off. They all had also uneasy tremors of upper extremities. All recovered.

134. *Edinburgh Medical and Surgical Journal*, 1851, vol. lxxv, pp. 495 and 499.

Taylor's cases quoted. See above.

135. *Edinburgh Medical and Surgical Journal*, 1829, vol. xxxii, p. 305.

By Dr. Ebenezer Gairdner.

A youth, æt. 17, took more than half an ounce of *White Arsenic* about 11.30 a.m. By 1 p.m. he had been attacked with vomiting and very violent retching, with much distress. At 2 p.m. he was seen in bed; eyes rather sharp, betokening no great pain, but considerable uneasiness; frequent vomiting; heat and uneasiness in gullet, but more distressing and pungent in stomach. Pulse 112, pretty sharp; skin rather hot; tongue white and dry, with urgent thirst. Water was copiously injected into the stomach, and at last yellowish mucus, slightly streaked on one occasion with blood, was vomited. The excessive uneasiness at stomach slightly abated; the vomiting and retching became less constant; and the frequency of pulse and heat of skin declined. The rapid approach of general chilliness, cramps of legs, and coldness of extremities, indicated approaching collapse. Mucilage, with *Sulphuret of Potash*, was given, but almost immediately rejected. Fomentations, with sinapisms to the legs, were applied.

At 4 p.m. passed a very copious stool, rather loose, without blood, and painless. Towards 6 p.m. he was drowsy, very sensible of cold, and still vomiting occasionally. The vomited matter was chiefly yellowish fluid intermixed with mucus. Still no pain or tenderness at epigastrium, and the uneasy burning sensation there had almost ceased; the cramps were extending upwards, and the temperature of extremities sinking. Pulse not above 70 and small, and heat of the trunk below the natural standard.

About 7 p.m. he passed by stool, without any marked pain or tenesmus, an ash-coloured fluid like dirty water, with some yellow mucus like that in the vomited matters, and free from blood. General sinking of vital powers, with increasing drowsiness.

Between 8 and 9 p.m. pulse was small and irregular, varying from 70 to 140. Mouthfuls of the same kind of yellowish fluid continued to be occasionally discharged without any seeming effort; very slight feeling of heat in stomach; thirst not urgent, but swallowed very readily any fluid that was given. The cramp was extending to abdomen, but did not cause much suffering. From this time he continued drowsy and quiet, and at 2 a.m. he expired almost unperceived, fourteen and a half hours after the poison.

Post mortem after twelve hours. Muscles of body strongly defined and rigid, being in a state of spastic contraction; abdominal muscles in particular were hard and very tense. Some lividity, chiefly on the dependent parts of trunk and thighs, but no ecchymosis or œdema. On moving the body to the table there were discharged from the mouth several ounces of a slightly viscid and yellowish-brown fluid. Muscles of thorax and abdomen on being dissected were peculiarly deep red and firm. Vessels of costal pleura injected, and towards the spine presented a vivid, arborescent appearance, and a general diffused blush, without any morbid adhesion. Both lungs continued completely inflated after the chest was opened, appearing as if they were too large for the capacity of their cavities. *Pericardium* contained about an ounce of straw-coloured fluid. *Heart* was of natural size, but strongly contracted, and felt hard like cartilage, and was deep red like the other muscles. Its left side was empty, but the right ventricle and auricle filled with dark fluid blood. *Liver* was florid from a little excess of blood. *Gall-bladder* partially filled with yellowish-green bile. *Small omentum* very red. *Large omentum* not so injected. *Spleen* pretty natural, but very firm. *Pancreas* firm and somewhat redder than usual. *Mesentery* very slightly injected, and contained several tubercles between its layers. Externally, portions of the *Stomach* at the great curvature appeared of a red colour, which deepened in intensity, and became more general towards the pylorus, but which seemed to be transmitted from the inferior coats through the peritoneum. At this extremity the organ was more than usually contracted, and peculiarly hard and firm; and a considerable quantity of fluid was contained in it, yellowish, viscid, with some flocculi. The villous coat was but slightly reddened towards the cardia, and partially so in the great curva-

ture, with some vivid spots having specks of yellowish-white crust; but towards the pylorus the redness was general and of a deeper hue. Here its rugæ were enlarged and peculiarly prominent, and there was a spot, rather more than an inch in diameter, having a deep red base and a granular surface, in part covered, but more largely and thickly than the small spots, by some coloured dryish crust. The villous coat of this spot was somewhat thickened. The *duodenum* was also considerably injected internally, and the *jejunum* and *ileum* likewise red in many parts.

A lumbricus, five inches in length, was found quite lively in the *ileum*. *Cæcum* only slightly reddened, while the large intestines were throughout their whole extent almost perfectly white, having only delicate red lines interspersed. The *Colon* was much constricted, so as to resemble a firm cord about the size of the index finger. It was still less in size at the sigmoid flexure: but the *rectum* was inflated to a considerable extent. The *Urinary Bladder* was much contracted, and contained about two or three ounces of urine. The mucous coat was whitish, with some red and blue vessels spread through it. The urine was turbid, milky-white, and coagulated from heat.

136. *Edinburgh Medical and Surgical Journal*, 1830, vol. xxxiii, p. 61.

By Dr. Hugh Ward.

A youth, æt. 17, took three drachms of *Arsenic*, on an empty stomach, in water, about 7 a.m.

About 9.30 a.m. he was found in bed, disposed to sleep, eyes suffused and languid; pulse 90, soft, and rather feeble; tongue much furred. Slight nausea; no pain, except slight tenderness in region of stomach when firmly pressed. Within ten minutes more he had vomited a quantity of saliva and mucus; he drank freely of tepid water and ejected it as freely. Drinking and vomiting continued with little intermission till 12.30 p.m.

About 1 p.m. pulse was 112, but not stronger, though the heart had begun to act with much apparent energy.

At 3 p.m. he had continued to vomit after drinking decoctions of linseed. Pulsation of heart strong and sharp; pulse at wrist 116, sharp but easily compressed. Gave him *Carbonate of Soda* in tepid water; and he drank and vomited very freely. The fluid

ejected from the stomach had a slightly yellow tinge. He had only slight tenderness over the lower edge of stomach and around the umbilicus when firmly pressed; slight pressure gave no pain. Sixteen leeches were applied to the tender spot, followed by poultices.

At 8 p.m. his appearance improved; eyes more clear, and face less sallow; pulse 118, soft; action of heart still violent. Has vomited several times; inclines to drink. To take *Castor Oil*.

At 10 p.m. much the same; pulse 115 and soft.

Midnight; a little restless; pulse as frequent, but more soft; action of heart not so strong; feels a craving for food; countenance less animated; eyes more languid.

At 3 a.m. very restless, pulse feeble and rapid, sunken face, cold extremities; apparently sinking. To take *Camphor* and *Hyoscyamus*; and apply heat to extremities.

At 7.30 a.m. says he is much better; very little pain in stomach on pressure; rather more thirsty; vomited the last draught in thirty minutes; has vomited several times since.

At 11 a.m. pulse 115, soft; action of heart still strong; a little pain in stomach when pressed; more thirst. Has not vomited since 9 a.m. Dislikes the gruel and linseed. Applied twelve leeches to epigastrium, and blood to be extracted with cupping glasses; and extremities rubbed with *Camphorated Spirit*.

At 1 p.m. has lost one and a half ounces of blood, but could not bear the cupping glasses from pain. Pulse 115, more feeble, irregular; heart's action diminishing. A blister to be applied over the stomach extending to umbilicus. Continue *Camphorated Spirit*.

At 4 p.m. very restless; face anxious; eyes more suffused; says the blister gives him much pain and wishes it removed. Pulse 115, very feeble; heart's action less strong; skin covered with a cold sweat; extremities cold; several stools since 2 p.m., and he has still desire for stool; stools rather dark and bilious, mixed with a little mucus.

At 7 p.m. much worse; more restless, and cannot tell from what cause. Thirst considerable; pulse almost imperceptible; action of heart very feeble and irregular; complains of burning heats over the body, though the skin feels cold to the touch; body covered with profuse cold sweat.

At 9.30 p.m. constant tossing in bed; countenance exceedingly

anxious; frequent sighing, but cannot say from what cause. Pupils insensible to light; pulse imperceptible; heart's action can scarcely be felt; still frequent stools, brownish mixed with mucus; still answers questions distinctly; thirst considerable; can lie on belly and endure pressure over it. Continued to sink till he died about midnight, forty-one hours after the poison.

Post mortem in fourteen hours.—Yellowish fluid escaping from mouth; extremities exceedingly rigid, muscles generally much firmer than usual. A little livid discoloration under each ear, extending around and down the neck to the top of the chest with the scrotum, glans penis, and nails. On laying open the chest and abdomen, the divided muscles presented a fine bright-red appearance. *Pleura* generally more vascular than usual, particularly that portion which is reflected over the diaphragm. Little fluid in cavity of chest. *Pericardium* very muscular, and containing about two ounces of reddish-brown fluid. *Heart* rather smaller than natural, and hard like a muscle when spasmodically contracted; external surface natural, but when cut into it presented the unusually red appearance which the other muscles possessed. Scarcely any blood in left ventricle; the right appeared to be full; the coagula in the ventricles exceedingly fragile. *Lungs* generally a deep bluish purple; no collapse of them; they filled the whole space allotted to them in the chest, and when cut into their vessels were found gorged with black blood. *Omentum* very vascular, but not adhering. *Small intestines* distended externally; much more vascular than usual; their vessels presented a beautiful arborescent appearance. *Stomach* externally more vascular than natural, particularly along its larger curvature and about the pylorus, where there were several patches of the size of a shilling, of a deep red or livid colour. In the stomach were about twelve ounces of a thick yellowish fluid; its inner coat was generally more vascular than natural, especially along the larger curvature and about the pylorus, where there were several thick corrugated patches of a deep livid colour. There were also several spots, each about a line or a line and a half in diameter, of a brownish-yellow colour, as if the particles of some substance were ingrained into the villous coat. *Pylorus* much thickened and very vascular. *Liver* externally much paler than usual, but when cut into, of its usual appearance. *Gall-bladder* partly filled with saffron-coloured

bile. *Colon* rather more vascular than usual, and dilated from *caput coli* to sigmoid flexure, where it became much contracted as far as the rectum, not thicker than the thumb, and firm; not much more vascular internally than usual; where contracted its walls were much thickened, and the ligamentous bands of the whole of it more contracted than natural. *Small intestines* less vascular internally than externally, but rugæ very distinct and firm. A thick yellowish fluid, free from feculent smell, in small intestines, but little in large. *Spleen* darker than natural. *Kidneys* more vascular than usual; in the pelvis of the left was a small quantity of purulent fluid. *Bladder* much contracted and firm, not larger than a winter, pear; its internal coat more vascular than natural, and its rugæ very distinct. *Mesentery* considerably injected. A little effusion into abdominal cavity.

Additional remarks by Dr. Christison.—The rugæ of stomach were here and there elevated nearly to the size of half the little finger slit longitudinally; these elevations were dark bluish black, hard, and incapable of being extended when the peritoneal coat was stretched; and they were formed by blood minutely extravasated and incorporated with the cellular tissue between the villous and muscular coats.

Reference made to Pyl in *Aufsätze und Beobachtungen aus der gerichtlichen Arzneiwissenschaft*, i, 58; and Metzger in Schlegel's *Collectio Opusc. ad Med. Foren. Spectantium*, iv, 23.

137. *Edinburgh Medical and Surgical Journal*, 1830, vol. xxxiii, p. 67.

By Dr. Robert Christison.

Six persons took *Arsenic* in champagne. Most rose from the table before the cloth was removed; but two of them were not seized till an hour after the rest. The symptoms in all were sickness, vomiting, and severe pains in bowels; and in no long time one had also diarrhœa. The vomiting continued violent till early next morning; and warm water was taken freely to encourage it. In the course of the night all were affected with a feeling of heat in stomach, throat, and mouth; and in the morning the lips became incrustated, and the skin cracked and peeled off. For three or four days they had disinclination to eat. Each was proved to have taken a grain of *Arsenic*. Four of them were taken ill ten minutes after the poison.

138. *Edinburgh Medical and Surgical Journal*, 1842, vol. lviii, p. 521.

O'Reilly's case quoted. See below.

139. *Edinburgh Medical and Surgical Journal*, vol. lxii, p. 262. Shipman's case quoted. See below.

140. *Edinburgh Medical and Surgical Journal*, 1850, vol. lxxiv, p. 243.

Case by Professor Forget, of Strasbourg. Translated from *Gazette Médicale de Paris*, Sept., 1849; and *Archives de Médecine*, Feb., 1850, p. 222.

A man, æt. 63, took 15½ drachms of *Arsenious acid* on June 10th at 6 p.m., on account of a criminal charge. In one hour there was abundant vomiting, then colicky pains and repeated stools. To hasten his death he threw himself into the Rhine, but was rescued. At 8 a.m., July 11th, his face was pale and altered; feebleness extreme; extremities, nose, and ears cold; pulse small and frequent; tongue cold and moist; abdomen rather painful, with liquid stools. Intelligence clear, answers slow, anticipations gloomy, and he refused to accept assistance. *Peroxide of Iron* was given, and *Ether*; *Sinapisms* to legs and arms. Repeated vomiting followed the *Iron*. In two hours there was a reaction; heat returned to extremities; face less contracted, and had more colour; answers more easily given. At noon, reaction was considerable; face red and distended; pulse full and frequent; skin hot; vomiting and liquid stools continue.

Patient was bled to the extent of 12½ oz.; twenty leeches to epigastrium; and *Taraxacum* and *Nitre* were given. In the evening reaction was less forcible; heat and fever abated; vomiting ceased; colic less violent, and fewer stools; a little abdominal tension and general depression. Had a good night, except a little delirium.

12th.—Face natural; pulse 116, well developed; tongue yellowish, a little dry; abdomen less sensible and less resisting; one natural stool; urine normal.

On 18th all symptoms gone; but on the previous evening the patient stated that he felt in the left leg rather acute pains which disturbed sleep; the leg was not sensibly altered either in volume or colour; it was a little cold to touch, and painful on pressure.

On 14th general condition the same ; very acute pain in left leg, and toes remarkably cold and void of colour. Warm poultices to be applied.

On 15th the general state was satisfactory. Left foot and leg were cold and livid, as it were cyanosed, with blue patches as high as the knee, very painful on pressure. The pulsations of left crural and popliteal arteries were less strong and less full than those of the right ; the pulsations of the posterior tibial artery could not be felt at the lower part of left leg. The mortification progressed, and the leg was amputated on June 20th. The divided muscles possessed very little retractile power, and no other artery was tied than the crural. The patient gradually sunk ; sphacelus attacked the stump, and he died on July 1st. Dissection showed the following results :—Mortification of the soft parts in almost their whole extent. Redness in patches of the chief arteries, which were in certain spots obstructed by bloody clots. Veins sound but containing some clots, yet without trace of phlebitis or suppuration. Dissection of the crural stump showed commencement of gangrene of integuments and muscles. The chief arteries were thickened, reddish, and contained some bloody clots, soft and not adherent. In the crural vein, close to the section of the limb, was a consistent clot, and above it the veins contained sanious purulent matter as high as the vena cava. No trace of metastatic abscesses in viscera.

141. *Edinburgh Medical and Surgical Journal*, 1846, vol. lxi, p. 43.

By J. Hakes. Read by R. H. Brett at the *Liverpool Pathological Society*.

A family drank water containing *Arsenic*.

On February 16th the mother was dying ; unconscious, skin cold, arms in continual motion about head ; she died in a few hours ; before death, consciousness returned for a short time. The youngest son had died a week previously, as it was supposed, from hydrocephalus ; the symptoms, however, of mother and child appeared to have been bilious vomiting and purging, with great thirst and head affections. The rest of the family looked ill, but made no complaints.

18th.—The eldest son and one daughter had bilious vomiting and purging, with great thirst ; the daughter felt some curious

sensations in her lower limbs; in both the pulse was very quick.

19th.—The eldest son was better, as also was his uncle who had been there one day, and was seized after taking tea in the house. The two daughters and the youngest son were now suffering. The vomiting had ceased in the one first attacked under the use of *Prussic acid*, and had given way to nervous symptoms. There was great restlessness, indisposition to answer questions, numbness of lower extremities, while the arms were in continual motion in the air, as if picking at something above the head; skin hot, but not dry or discoloured; tongue dry and brown; great thirst; throat seemed dry, and breathing was quick and audible; pulse 120 to 130, but not hard; heart acted forcibly. The girls did not complain of pain on pressing the abdomen; but the youngest son slightly moved when this was done, though he said it gave him no pain. They all had uncomfortable feelings which they could not describe, but were at this time conscious.

On 20th they were much worse. Breathing and pulse very rapid; tongue and lips dry, cracked, and covered with blood and sordes. The eldest girl was unconscious, throwing her arms, legs, and body about in every manner. The other two had the same symptoms as yesterday, only to a greater degree, and consciousness was fast departing. There had been no purging or vomiting in the girls since 18th.

On 21st the youngest boy died at 4 p.m.; the peculiar movement of the arms continuing up to his death. Between that period and the next night the two girls died. The servant early at this period was taken ill and went home; later a cow which had drank the water was affected. The workmen, with one exception, were not sufferers. A short time after, the servant was admitted into the fever hospital with symptoms purely nervous, and in a few days was discharged cured.

Post mortem of youngest son, after twenty-four hours.—Lungs congested with bloody serum, especially the right. Bronchi red and injected, and covered with red mucus. Blood in body dark and fluid generally, coagula in heart. Trachea and epiglottis had marks of inflammation. Liver slightly enlarged; exteriorly many yellowish-green patches; internally of a uniform state or ash-colour. Bile in gall bladder copious and dark. Stomach

contracted, containing some greenish fluid and mucus ; punctiform and ramified redness at splenic and pyloric ends ; rugæ red and vascular. Commencement of duodenum red like the stomach ; a few patches of redness in jejunum ; lower part of ileum discoloured for about twelve inches, where the solitary glands were unusually large and numerous. Cæcum dark and congested. Rectum and colon discoloured here and there. Sinuses and veins of head congested ; about a tablespoonful of serum at base of brain, and the same quantity in ventricles.

142. *Edinburgh Medical and Surgical Journal*, 1840, vol. liv, p. 262.

By Dr. Puchelt, junior. (From *Medicinische Annalen*, Jan., 1840.)

C. L—, æt. 33, was taken suddenly ill after dinner ; violent vomiting, acute spasms in region of stomach, pale face, prostration of strength, small, very feeble pulse, &c. She felt ill fifteen minutes after the meal. Three children were lying on the floor with sunken features and expression of great suffering. Their ages were fifteen months, 3½ years, and 5½ years. The two eldest had vomited several times. Their father had acute abdominal pains ; severe vomiting soon came on, with spasmodic pain in region of stomach, pale sunken face, feeble pulse, and great depression. *Peroxide of Iron* was given with great relief. The man after the third dose had a greenish-yellow stool ; after which the pains and uneasiness abated very considerably and his colour became more natural. Next day the woman and eldest child still had uneasiness and occasional pains in abdomen, and suffered much from palpitation of heart.

[Another case is referred to, but no symptoms given in this translation. E. W. B.]

143. *Edinburgh Medical and Surgical Journal*, 1822, vol. xviii, p. 167.

By Alexander Murray.

William M—, æt. 45, complained of the following symptoms. Pain and heat in region of stomach and lower part of chest ; occasional uneasiness in abdomen, and sometimes ineffectual efforts to go to stool ; thirst ; difficult breathing ; heat and uneasiness of throat, with hoarseness ; soreness of eyes, which looked

inflamed; shifting pains in extremities, particularly in the arms, which had not their usual strength; great restlessness; anxious countenance; pulse 100 to 110, not strong. This illness commenced about 10 a.m. on 19th. He soon after had thirst and headache; and between 3 and 4 p.m. was seized with vomiting, which recurred often during the next four or five days, especially on attempting to quench his thirst. In the early part of the week he was heard to complain of pain in stomach, eyes, throat, breast, and arms; he urinated frequently; and about this time he pointed out to his sister a hollow between his breast and belly, into which she said "she could have laid her arm." His illness had scarcely at any time confined him to bed.

On 22nd he took *Epsom salts*, which operated.

On 24th had a *Blister* over stomach and lower part of chest, and took an *Opiate* at bedtime.

25th.—His face looked more disturbed and anxious; redness of eyes and hoarseness increased; and this day on palate and uvula were observed small, roundish, white, acuminate prominences; seemingly the membrane covering the palate, bones, and velum pendulum, detached at the parts by a whitish liquid. Took to-day an ounce of *Castor oil*, which operated in afternoon. He went to bed at 8 p.m. A little past 2 a.m. he rose in search of water to drink. On returning to bed he was heard to utter a deep groan; after which he lay motionless and quiet, and was very soon found to have expired.

At 10 a.m. many blue spots were observed on the inferior extremities.

James M—, Mary M—, and Helen M—, were attacked the same forenoon as their brother William, nearly with similar symptoms.

James M—, æt. 52, a few minutes after breakfast on 19th had a feeling of sickness, but, notwithstanding, went to church soon after, where he felt dimness of sight, with a continuance of the sickness, which by 2 p.m. had so increased that he was obliged to leave the church. On his way home he vomited repeatedly a reddish sort of matter, had thirst, and a burning sensation over belly. With difficulty he reached home, when he opened a window in his room, and stretched himself upon the floor. The feeling of heat *within* did not leave him for a week, and he vomited occasionally the same length of time; while he was at times so dis-

tressed with heat of skin and overpowering faintness that he went into a small stream and plunged his arms and head into the water. In the early part of the week he felt his throat a little sore, and had uneasiness over the whole body, especially in arms and legs.

On 22nd he urinated with pain, urine being red; about this time he had some uneasy feeling in eyes. During the week little passed from bowels, but he had repeatedly ineffectual calls.

On 25th he complained of little but pain in arms, particularly the left, of which he then had in some degree lost the strength; pulse natural in frequency, but intermitting.

On 29th he had imperfect vision, and difficulty of breathing; still pains in arms, and the left one more powerless; pulse natural; left pupil contracted. All these symptoms soon disappeared except the affections of arms.

Now (Dec. 13th) the motions of the hand are much less impaired than those of the arm and forearm; in particular the power of bending the forearm on the arm is almost entirely lost.

Mary M—, æt. 50, was seized immediately after breakfast on 19th with very heavy sickness, and soon retched violently, but little was vomited. She had great thirst, and vomiting recurred at times for several days. During the week she had some soreness of eyes and thirst, with heartburn, and pain in most parts of her body; had then also tenesmus, but with the exception of one minute portion of very hard fæces, nothing whatever was evacuated till 25th, when she took *Castor oil*, after which her bowels were natural.

On 25th she complained of her throat, bones, and of colicky pains, with unnatural feelings, and some want of strength in her legs and feet; pulse then 120. A few days afterwards she had swelling of feet, difficulty of breathing, with numbness and creeping in inferior extremities.

At present (Dec. 13th) she has numbness and pain in arms and legs; no other complaint; pulse 96.

Helen M—, æt. 48, about fifteen minutes after breakfast on 19th was seized with excessive sickness, followed by retching, and she vomited some whitish matter. These symptoms recurred occasionally for several days, and were soon accompanied by burning at pit of the stomach, hoarseness, slight inflammation of left upper eyelid, with numbness, and pain in arms and legs; for a week she had purging and great weakness and tendency to

faint. All these symptoms gradually abated, except the loss of muscular power, which assumed the form rather of great general debility than that of a partial or paralytic affection, and in November existed in such a degree that she professed inability to walk.

Now (Dec. 13th) she has only some weakness and unusual sensations in her extremities; pulse 96.

Post mortem of William M—, after three days and eight hours. Right ear and corresponding side of face as well as the scalp were of a deep clay-blue colour. On chest and belly there were several spots and streaks, some green, some blue; the back, on which the body lay, was of a livid colour from head to foot; several roundish spots of a still deeper hue gave to the shoulders and neck a mottled appearance. Penis much swollen and red. Scrotum enlarged and dark blue.

In abdominal cavity several ounces of a high-coloured fluid were found. On the intestines, jejunum, and ileum, many purple spots, some of them several inches in circumference, were observed; and the outer surface of the stomach, in a tract which extended from the cardiac orifice and occupied for some distance downwards the whole circumference of that viscus excepting the smaller curvature, was of a clear dark red colour, and through this space dark lines, apparently veins, ramified. This appearance was perhaps from twenty to thirty square inches in extent. The substance connecting the stomach to the spleen was, as well as a small part of the transverse colon, of a red colour. Spleen gorged with blood. Duodenum for a short distance below pylorus almost to its inferior extremity, and round nearly the whole intestine, was a very dark purple. The internal surface of that part of the stomach where the outward appearance already described existed was bright red, and over this lighter dots were thickly scattered, making such an appearance as might be produced by a red colour being dashed from a painter's pencil upon a somewhat darker ground. The internal coats of duodenum were very dark, with a slightly reddish hue, pulpy, thickened, and easily separated from the peritoneal covering; while in one roundish spot of the size of a crown-piece the villous and muscular coats were entirely wanting. Red patches were observed on the inner surface of jejunum and ileum, the shape, size, and situations of which were the same as those of the appearances already noted on

the outside of these intestines. The stomach and duodenum contained about a quart of a brown, semi-opaque, thickish liquid ; the jejunum and ileum were empty, and coated with a yellow viscid matter. In the cavity of thorax were ten ounces of a reddish turbid liquid, and about half that quantity in the pericardium. Pharynx was unusually red. A brother-in-law afterwards confessed to have poisoned them with *Arsenic* on 19th.

Reference made to Morgagni (*Epist.*, lix, 3) for the case of a woman who died from *Arsenic*, in whose " *facies corporis posterior, ne suris quidem et calcibus exceptis, tota erat nigra.*"

144. *Edinburgh Medical and Surgical Journal*, 1811, vol. vii, p. 80.

Review of a work by Georg. Fried Jaeger, Stuttgartianus, 8vo, p. 78, Tubingæ ; entitled *Dissertatio Inauguralis de effectibus Arsenici in varios organismos, necnon de Indiciis quibusdam veneficii ab Arsenico illati ; Quam præside, C. F. Kielmayer publice defendet*, Jan., 1808. An extract is given in Gehlen's *Chemical and Physical Journal* by Dr. Siegwart, where several additional observations are given.

[Only a brief abridgment is given in the *Edinburgh Medical and Surgical Journal*, therefore I have omitted it that the *original* may be consulted.—E. W. B.]

Editorial remarks on poisoning by *Arsenic*.

1st Class ; where the patient recovers. Uneasiness and feeling of heat at præcordia ; violent vomiting, sometimes preceded by sense of heat in tongue and throat ; then purging, sometimes of blood. In region of stomach and bowels there is often pain, but more usually an insupportable uneasiness and oppression there. In one case there was hiccup, eructation, and difficult breathing, but no tension or swelling of stomach. Sensation of coldness, especially in extremities, and cold sweat are almost always present, with general paleness and pale face ; in some cases languor, faintishness, and tendency to sleep. Sometimes convulsions. In one case *ardor urinæ*.

2nd Class ; where the patient lives about a day or two. The first symptoms are heat and thirst, or vomiting, or inexpressible distress ; the first is less frequently observed than the other two. In one case of an infant killed by *Orpiment*, the matter vomited was viscid and colourless. In one case a fetid stool was pro-

cured by a pessary, and in another gripes were noticed; otherwise purging has not been mentioned: in two cases the belly swelled; in one there was great feebleness and lassitude; in all convulsions seem to have taken place, in one case impeding deglutition. In three cases the body is mentioned as having been discoloured or marked with livid spots; in one even blistered, and one was highly foetid. In one case the intestines were inflated and the bowels and stomach red with turgid vessels; in the other the fauces and stomach were yellow, and the heart, spleen, and lungs dark blue.

3rd class; where death occurs in a few hours.—The symptoms succeed each other rapidly, or begin at the same time; the fainting and general debility almost precede the vomiting; the vomiting occurred in all cases but two; purging or gripes in most cases; the stool in one case was green, watery, and viscid. In one case vertigo, also general pains and loss of speech. Convulsions did not occur often, but there was sometimes hiccup. In a few cases there was much heat and thirst, even in one in which (a symptom more frequent than heat) there were complaints of a sensation of intense cold and paralysis of the extremities, with cold sweat. The pulse in the only case in which it is mentioned was slow and languid, and death seems to have generally proceeded from exhaustion and rapid sinking of the vital powers. In none of these violent cases is there any mention of delirium or affection of the mind, except in one in which the poison was applied externally to the head.

Post-mortem appearances.—In some cases body is swelled or livid. Stomach in almost every instance inflamed, abraded, or even eroded, sometimes distended, and at others corrugated. Lungs almost always livid, or having livid spots on surface. In one case they are inflated, and in another flaccid. Liver in one case grey. Heart in one case flaccid. Blood sometimes black and coagulated, sometimes black and fluid, sometimes florid and fluid.

145. *Edinburgh Medical and Surgical Journal*, 1811, vol. vii, p. 89.

Review of *Nouvelles Expériences sur les Contre-Poisons de l'Arsenic*; par Casimir Renault; Paris. [Only a few symptoms quoted. The original must be examined.—E. W. B.]

146. *Edinburgh Medical and Surgical Journal*, 1827, vol. xxvii, p. 441.

By Dr. Robert Christison.

A girl was poisoned by *Arsenic*. The symptoms were as follows:—On Wednesday, between 5 and 6 a.m., she said she had not been so well as usual during the night; not long afterwards, when sitting striking a light, she became suddenly sick, and appeared to fall from her chair. She had pain in bowels. She had vomiting and purging this day and the previous one. On Thursday forenoon she was much worse; had excessive thirst, vomited a great deal, particularly when she drank anything, purged frequently, and complained of severe burning pain in her whole bowels, but particularly in the side. These symptoms continued unremittingly till she died at 9 p.m. In the morning of that day she had also excessive prostration, occasional stupor, cold extremities, clammy perspiration, pulse imperceptible at wrist or temple, and felt over the heart to be beating faintly 150 a minute. She lay down exhausted after an attack of vomiting; face sunken and ghastly; whole body, and particularly hands and feet, covered with cold sweat. The arms were more livid than natural.

Post mortem in twenty-two days.—Stomach externally everywhere painted with red vessels, bright red in most parts, dark red in other parts. Omentum was the same, especially at its base. Small intestines reddish, in many places contracted in diameter and corrugated, and the mesentery at these parts was inflamed. The inner coat of stomach was raised up, in many parts separated from the adjoining coats, in others corrugated or abraded in irregular circumscribed patches, with a raised mark, formed by the other coats. The inner surface seemed as if it had been seared with a hot iron, the coats being drawn together in a very singular manner. In one part there were large patches of a coal-black colour, confined entirely to the villous coat. There were no such marks in the small intestines, the inner membrane of which, however, bore otherwise the same appearance as the stomach. The stomach contained 10 or 12 oz. of a thick fluid, with yellowish particles floating in it. Similar particles were adhering to the villous coat, and in some points deeply imbedded in it. At these places the membranes, except in colour, looked like a fine texture corroded by lunar caustic, and around one spot there was a bright areola.

Reference made to Pyl's *Aufsätze und Beobachtungen*, i, 58; Metzger in Schlegel's *Collectio Opusculorum*, &c., iv, 23; Remer, in his edition of Metzger's *System der Gerichtlichen Arzneikunde*, 258.

147. *British Medical Journal*, 1862, vol. i, pp. 474, 507.

Orton's cases quoted. See above.

All the *four* children, who died, were considered by the surgeon who saw them to have "diphtheria."

148. *New Sydenham Society's Publications*, 1860, vol. viii, p. 432.

Reference to poisoning by *Arsenic* in cigars; see Friedrich 9, 8, and *Gaz. di Tribunali*.

149. *Medical Times and Gazette*, 1865, vol. i, p. 52.

From *Bull. de Thérap.*

M. Charcot relates here two cases of anaphrodisia from taking large and long-continued doses of *Arsenic* for skin disease, thus confirming Rayser's statement.

150. *Medical Times and Gazette*, 1865, vol. i, p. 659.

Report of *Royal Medical and Chirurgical Society*.

Dr. Dickinson said hæmaturia has been found in man and animals after inhalation of *Arseniuretted Hydrogen*.

151. *Lancet*, 1869, vol. ii, p. 508.

By Dr. Duffin.

A woman with chronic psoriasis took three minims of *Liquor arsenicalis* three times a day from September 3rd to 19th, when she had itching of conjunctiva and whitish tongue. At the same time she had an aching pain in right shoulder and elbow, which on the following day was associated with a copious and well-marked eruption of herpetic vesicles over the integument of arm and forearm. Mr. Hutchinson says that *Arsenic* causes shingles.

152. *British Medical Journal*, 1878, vol. i, p. 88.

By Dr. John Morley. Poisoning of fifteen persons by *Arsenic*.

Feb. 21st, 2 p.m.—Was sent for to see two men who had been attacked by sickness at dinner; on arrival found fifteen persons

ill, nearly all of whom were vomiting frequently and violently. Gave emetics to all, and milk, white of egg, and gruel.

All had faintness, uneasiness about stomach, with intense pain in middle of back.

They were much relieved by vomiting, and comparatively well for a short period, till the above-mentioned symptoms returned, and did not finally cease till near midnight. One girl, aged 14, became blind, lost her speech, and fell down in a state of syncope, but was restored by laying her in bed and applying warmth to extremities. A child 3 years old, in a state of collapse, was restored by being nursed before the fire in a blanket. Several had severe rigors, relieved by bottles of hot water in bed. In one case a few drops of blood were vomited. In all the conjunctivæ were injected.

22nd.—Eleven of the patients who remained behind were visited to-day. In all, except the children, the congestions of conjunctivæ had disappeared, and given place to a yellow tinge, in which the skin did not participate. Diarrhœa occurred in two women, one of whom had taken a purgative the previous morning. Some complained of flickering of the muscles and disturbance of vision, preventing them from knitting, sewing, or reading; and when they closed their eyes they saw shining particles floating backwards and forwards. One complained of a nauseous taste.

28th.—One woman said she had been tormented for the last two days and nights with irritation of skin, which she compared to being in a bagful of fleas.

On March 1st this had ceased.

153. *British Medical Journal*, '1858, p. 725.

By Mr. H. G. Trend.

A woman took some *Arsenic* twice a day for three months, to cause abortion, altogether amounting to two table-spoonfuls. When seen at the end of this time she was in bed, looking pale and haggard, with prickling pains in both legs from soles to about two inches above knees. Sensation was completely lost in left leg, and considerably impaired in the right. In both there was total loss of all power of motion. She said she had been unable to get about for the last fortnight, and that for some weeks previously she had had considerable difficulty in doing so,

She had no appetite; bowels irritable; urine high coloured and scanty. She said that about a month after she commenced the *Arsenic* she had sickness and diarrhoea; she then left it off for two days, when, these symptoms being relieved, she again took it regularly up to three days of being visited professionally. She said also that she occasionally suffered from intense thirst and pain at pit of stomach; that the bowels had been very loose, and the stools tinged with blood for about six weeks. She had lost flesh considerably, and seemed at times hardly able to collect her thoughts. The sharp prick of a pin had no effect on the left leg, and a hard pinch was requisite to excite motion in the right. I saw her first in the middle of September; by the end of October she could walk about with a stick. She was confined on November 12th; it was a foot presentation, and the child was stillborn, owing to the inefficiency of the expulsive power; the child was well nourished and perfect. By Christmas she was well enough to resume her domestic duties.

In July or August of following year she still had weakness of ankles, but was otherwise well.

154. *British Medical Journal*, 1873, vol. ii, p. 268.

Case of two children killed by *Arseniate of Soda* reported. It occurred at Blackburn. [Examine local papers for details.—E. W. B.]

155. *Edinburgh Medical and Surgical Journal*, 1843, vol. lx, p. 494.

Paper by M. Gasperin, abridged from *Comptes Rendus des Seances de l'Academie Royal des Sciences*, Jan. 2nd, 1843.

The chief morbid lesion produced by poisoning a sheep with *Arsenic* was pleurisy.

156. *Edinburgh Medical and Surgical Journal*, 1843, vol. lix, p. 350 (misprinted in "Index," vol. lviii).

By Dr. Archibald Dymock.

A woman, æt. 20, took two ounces of *White Arsenic* in powder at 3 p.m. At 5 p.m she was found writhing and tossing about in bed, making ceaseless but fruitless efforts, by change of posture, to alleviate her distress; moaning most piteously, occasionally retching, and exclaiming at brief intervals "I am mortally sick—mortally sick." She was very reluctant to state

the cause of her illness. The face was flushed, and had a most frightful expression of apprehension. Conjunctiva minutely injected, and round the cornea the ciliary vessels were so much enlarged as to imitate closely the appearance of the vascular zone in cases of acute iritis. Pupils greatly dilated. Respiratory movements small and frequent. Heart's action feeble and rapid. Extremities quite cold and pulseless. Hands and lower half of both forearms dark and livid, as in malignant cholera. Cold clammy sweat on skin. Gentle pressure to the epigastrium seemed to cause uneasiness, as she hastily articulated "sore," and thrust aside the hand. For more than twenty minutes she maintained the same restless commotion, invariably repelling every proffered service, and vigorously resisting every attempt to make her swallow. After this she became quiet and composed. I then advanced to the bed with a candle, and raising the eyelid, brought the light close upon the eye, on which she pushed away my arm, and having arranged her dress so as to hide the bosom, rose from bed, and walked unassisted to the fireplace, seating herself upon a chair. She had hardly done so, however, before she nearly slipped to the floor; she was caught and carried to the bed, where, after heaving one or two deep sighs, she died without a struggle, within two hours and a half after taking the poison.

During the last half hour there was merely retching, but there had been previous violent vomiting.

Post mortem after forty-one hours.—Stiffening of whole body well-marked, so much so that the rigidity of the muscles of the forearms had bent the fingers on the palms, and started the tendons at the wrists. Face retained the bright florid complexion as in life, and vessels of eye remained injected. The same intense lividity of hands and forearms, but none elsewhere. Stomach contained above a pound of dullish-brown, inodorous fluid, in which floated numerous shreds and solid masses of coagulated mucus. The inner coat was covered with a copious tough mucus. Rugæ prominent, numerous, and firm. Extensive bright scarlet patches in nearly the whole of the anterior and lower portions of the great *cul-de-sac*; these decreased towards centre of stomach, where there were a few isolated red spots, but they reappeared, and almost entirely covered the mucous membrane of the pyloric *cul-de-sac*. In some

of these patches was observed a bruised or purplish appearance, as if blood had been extravasated from the over-distended and highly injected capillaries; but on microscopic examination no actual escape could be detected, the darker spots owing their purple hue to the gorged state of the veins in the substance of the mucous membrane itself, or to the enlargement of the venous trunks ramifying in the submucous cellular tissue. The injected state of the capillaries did not extend into the duodenum, nor was there any in the rectum. Both sides of the heart were empty; the left ventricle from its firm tonic contraction very much resembling the hardness of concentric hypertrophy. A few hours' submersion in water entirely effaced this state of the heart.

157. *Edinburgh Medical and Surgical Journal*, 1840, vol. liii, p. 254.

Deville's case quoted. See above.

158. *Edinburgh Medical and Surgical Journal*, 1840, vol. liii, p. 400.

By Alexander Watson.

A man, set 45, took *Arsenic* about 10 a.m., with salts. He was very soon seized with vomiting, pain in the bowels, and purging, with great prostration of strength. He became weaker, and died in nine hours.

Post mortem after six days.—The glands of the mucous membrane at root of tongue and at each side of larynx were much enlarged, and the whole of the membrane presented an appearance of increased vascularity and unusual irritation. The internal surface of œsophagus and stomach thickly covered with mucus. Stomach contained about a pound of viscid bloody fluid. Mucous membrane of stomach deep red, except two patches, which were greenish or ash-grey. Near to the cardiac orifice a portion of intestine was abraded.

159. *British Medical Journal*, 1858, p. 804.

By Dr. James Whitehead.

Poisoning from *Arsenical* green wallpaper.

A young man had apthous ulceration of gums and tonsils, violent frontal headache, great languor, nausea and occasional vomiting, inappetence, diarrhœa, and disturbed sleep. The symptoms gradually increased till he went for change of air, when they

soon ceased. On his return home to the same apartment in four weeks he was worse than before. He had spongy gums, diphtheritis, violent neuralgia of forehead and face, great languor, occasional diarrhoea, and emaciation. He removed for a fortnight, but again, three or four weeks after his return, the symptoms reappeared in an aggravated form. The paper which was found to contain *Arsenic* was removed, and he had no more attacks, though he occupied the same room. Other persons also felt uncomfortable when using the room or that kind of paper.

160. *British Medical Journal*, 1858, p. 778.

By Dr. Thomas Skinner.

A woman nursing her first child took two doses of 30 drops of *Fowler's Solution* for eczema of scalp and face. It stopped the milk entirely, but it was afterwards restored by treatment.

161. *British Medical Journal*, 1858, p. 933.

Poisoning by lozenges of about 200 people at Bradford recorded. [See local papers.—E. W. B.]

162. *British Medical Journal*, 1856, p. 17.

By J. Wheatcroft.

An old lady took *Arsenic*. She had severe abdominal pains for a week.

A girl took two ounces of *Arsenical* mixture prepared for sheep. Symptoms of poisoning came on immediately. Intense thirst; drank anything that came in her way, but vomited speedily what she took. She died in eight hours. Two cats lapped at the vomited milk; one died in great suffering the following day; the other was very sick, and in a constant state of spasm for seven days, refusing all food, and became thoroughly emaciated. On ninth day all the hair came off, with the exception of that on the face; it continued quite bare for two months; the hair then began to grow, and in nine months the cat was covered with a beautiful silky fur, but only half the length of the former coat.

163. *British Medical Journal*, 1856, p. 730.

By Duncan R. McNab.

A patient after each dose of *Arsenic* had the sensation of extreme cold, which neither bedclothes or the fire could remove.

164. *Chambers's Journal*, 1856, July 19th, No. 183, p. 46.
Reference made to Boner's papers, No. 110, p. 90; &c.

165. *Medical Times and Gazette*, 1865, vol. i, p. 604.
Begbie's remarks quoted. See below.

166. *British Medical Journal*, 1856, p. 897.
By Dr. W. B. Kesteven.

References made to *Med. Jahrbuch. d. Oesterr. Staates*, 1822, i, 96; Vogt's *Pharmakodynamik*, 1831; also to a report by Professor Schallgruber called *Bericht über die am k. k. Lyceum zu Grätz vom Jahre 1817 bis einschliessig 1820 vorgefallenen gerichtlichen Leichen-Eröffnungen* (apparently quoted in the *Med. Jahrbuch*). See also *Journal de Chimie Médicale*, 1854, p. 447.

167. *British Medical Journal*, 1855, p. 1081.
References to *Monthly Medical Journal* (see below); Vogt's *Arzneimittellehre*; and *Medic. Jahrbuch des Oesterr. Staates*, 1822.

168. *Lancet*, 1873, vol. ii, p. 49.
By Dr. Wintrebert. From *Bulletin Médical du Nord*.
The local use of green paper dyed with *Arsenite of Copper* caused ulcerations on anus.

169. *Ophthalmic Hospital Reports*, 1859, vol. i, p. 270.
By Dr. A. S. Taylor.

On two occasions a man used, more than usually, a room papered with *Arsenical* paper. Both times he had an attack of illness, consisting of great depression and want of interest in anything, a husky feeling in throat, and soreness and irritability of eyes. During the second attack the conjunctiva of lids was deep red along the tarsal edges and at the angles. The lids were slightly tumid, and had a tendency to eversion. Vision was painful.

A medical man since his occupation of an *Arsenically*-papered room had mucous derangement of bowels, colic, and inflammation of tarsal portions of conjunctiva.

170. *Edinburgh Medical Journal*, 1865, vol. x, p. 200.
By Dr. Craig MacLagan.

Arsenic-eating makes men lively, combative, and of strong

sexual desire. In one case (Flecker) if he intermits it for fourteen days he feels stiff in the feet, with general lassitude and craving for another dose. If he takes a full dose he brings a good deal of wind off his stomach.

171. *British Medical Journal*, 1856, pp. 721, 757, 808.

By Dr. W. B. Kesteven.

Reference to *Association Medical Journal*; see below.

Translation of Dr. von Tschudi's paper in *Wiener Medicinische Wochenschrift*, October 11th, 1851. He says a pale and spare dairy-maid took *Arsenic* and became in a few months stout and rosy-cheeked, but taking too much died a painful death.

Leaving off *Arsenic*-eating causes a great dislike and indifference to those around; anxiety as regards some persons; indigestion in its various forms; loss of appetite; constant feeling of the stomach being overloaded; vomiting of mucus in morning, with increased secretion of saliva; sense of burning extending from pylorus to throat; spasmodic contraction of pharynx; griping pains; constipation; difficult breathing.

Reference made to *Annales d'Hygiène*, tomes 29 and 32.

Mr. Boner says it makes horses look fuller, but this fatness is only apparent, not true, as it consists in a puffing-up of the cellular tissue. Such horses sweat with the slightest exertion. Consumption or wasting away (*abzehrung*) follows sooner or later.

Boys who are employed in removing the impure *Arsenic* from the flues of the calcining-houses (in Cornwall) have very severe eruptions on the scrotum, and, if the shoes are low or bad, between the toes also.

Dr. Barham, of Truro, says few at the smelting-houses escape cutaneous affections, especially of the scrotum.

Mr. Harris, of Redruth, mentions the occurrence of skin disease.

Dr. Jago, of Truro, mentions the production of cutaneous affections of a mixed pustular and scaly character, attacking especially the scrotum, the depression between lower lip and chin, the angles of nose and face, the line along which the hat fits the forehead, in short, every crevice and fold where the *Arsenic* can accumulate. Cough and shortness of breath are common among those who work there.

Mr. Painter, of Truro, has observed obstinate pustular eruptions, debility, emaciation, profuse sweating on the least exertion, scanty urine, dyspnoea, and severe pulsation of heart. The tongue presents red edges with white fur, and the gums are inflamed; frequent nausea and vomiting are also observed.

Dr. Jago also says the *Arsenic* works are extremely fatal to donkeys, producing inflammation and mortification of intestines, stomach, liver, &c., from being taken with food in the stomach.

172. *British Medical Journal*, 1858, p. 215.

Letter by Dr. G. W. Balfour.

Arsenic-eating produced in a young woman obstinate eczema.

Scheffler in *Gesundheit der Begleute* says the *Cobalt* miners are subject to chronic *Arsenical* poisoning, which begins with conjunctivitis, sparkling eyes, and anasarca, simulating increased fat; ending with a hide-bound skeleton slowly sinking to the tomb.

173. *Royal Cornwall Gazette*, April 4th, 1851.

Trial for damages by *Arsenic* works.

A cow pined and got thin. A horse became very stupid and very poor, and its hair came off in spots.

Another horse was trembling, and froth working out of mouth and nose. In two horses there was perforation of stomach, and in one the stomach was thin.

174. *Medical Times and Gazette*, 1863, vol. i, p. 36.

Editorial.

Mrs. Garner suffered from vomiting and purging, and died after six days' diarrhoea. A *post-mortem* after eleven months showed well-marked redness in upper portion of intestines. *Arsenic* was found in the body.

175. *Medical Times and Gazette*, 1858, New Series, vol. xvi, p. 524.

By Dr. John Elliotson.

A lady took for rheumatism two minims of *Liquor Potassæ Arsenitis* three times a day. On the fifth day she lost her appetite and strength, her face became pale, she had a sense of weight

after eating, nausea, redness of eyes, and great nervousness. The *Arsenic* was left off and the symptoms vanished.

This occurred on three occasions when she took the *Arsenic*.

176. *Medical Times and Gazette*, 1863, vol. i, p. 63.

By Dr. Arthur Leared.

In two cases of phthisis *Arsenite of Potash* caused diarrhœa. In one it caused pain in bowels. In another it caused a sinking sensation at epigastrium accompanied with faintness.

177. *Medical Times and Gazette*, 1863, vol. i, p. 374.

Reference to the recent poisoning of ballet-dancers at Hamburg by *Arsenical* dresses [see local journals.—E. W. B.]

178. *Medical Times and Gazette*, 1863, vol. i, p. 576.

Reference to poisoning of the Johnsons, of Bradford, by *Arsenic* [see local papers.—E. W. B.]

179. *London Medical Journal*, 1781, vol. i, pp. 40, 44.

From Tissot's *Traité des Nerfs* [see original work.—E. W. B.]

Tachenius on opening a vessel in which he had been subliming *Arsenic* was instantly seized with excruciating pain at pit of stomach, syncope, cold sweat, vomiting and a general spasm, which gave way only by degrees to a vegetable diet.

A painter opened a box in which he had long kept some *Realgar*; he perceived a slight smell, and immediately fell into a syncope. Diemerbroeck mentions an amulet, which was a preparation of *Arsenic*, which when hung round the neck caused black pustules on the skin and pains in the breast, which ceased on its being removed.

Wepfer states that a young woman at Basel rubbed her head with an *Arsenical* ointment, which brought on violent pains, and afterwards swelling of the whole head, delirium, fever, and death on sixth day.

Sproegel (*Experim. circa Venen.*) quotes a similar case at Göttingen. He also made small incisions in the skin of a dog, and sprinkled them with about a drachm of *Arsenic*; it immediately fell into violent convulsions, accompanied with the strongest efforts to vomit, and died in convulsions at the end of five hours. The skin of the back was swelled, black and livid; stomach, intes-

tines, pleura, breast and lungs were inflamed. [In one of these references the poison is called "Cobalt," a name sometimes erroneously given to *Arsenic*.—E. W. B.]

180. *London Medical Journal*, 1781, vol. i, p. 136.

References to Majault's paper, read before the *College of Physicians of Paris*, Dec. 9th, 1780.

181. *Edinburgh Medical Journal*, 1858, vol. iii, p. 148.

By Dr. William N. Brown.

A man who had been employed in washing sheep with a solution of *White Arsenic* suffered from inflammation of the skin of the lower part of abdomen, penis, scrotum, and upper part of thighs; in some places the inflammatory action had gone on to ulceration. The pain was severe and burning. There were signs of considerable constitutional derangement. The evening of the same day on which he washed the sheep he had smarting and pain in the affected region; this increased, and the next morning the parts were red and inflamed. It was more than a fortnight before he was able to resume his work.

182. *Edinburgh Medical Journal*, 1856, vol. i, pp. 625 and 707. (Misprinted in Index, "vol. ii.")

By Dr. Robert Christison.

In the beginning of May Mrs. Wooler was attacked with pain and vomiting soon after dinner.

On the 8th Dr. Jackson found her with symptoms of gastro-intestinal irritation, and gave her light bitters and *Bismuth*. She had a sickly look, small frequent pulse, flatulence, and frequent slight tickling cough, or rather hacking, without expectoration; occasional discharge of mucus from bowels, with tenesmus and griping, and of some days' standing; redness of eyelids and lining membranes of nostrils; loss of appetite and great failure of strength. In three or four days more there was anxiety, restlessness at night, and greater weakness; increased griping, tenesmus, and mucous discharge, now also streaked with blood; dryness or tightness in the throat, with hoarseness of voice, and the vomiting which had ceased began again. She took *Bismuth*, *Hydrocyanic acid*, and *Opiate* injections.

On May 16th she was in the same state. The same symptoms continued with little change, except a progressive exacerbation, till May 28th, when the mouth was ascertained to be sore, and the throat so uneasy as to prevent swallowing. Two days later the stools, previously bilious, assumed a fatty appearance owing to the presence of pus, as proved by microscopical examination. The vomiting and purging were now worse than ever, and the vomiting seldom occurred except after the taking of food or medicine. The tongue was red and fiery, the mouth and lips excoriated, the anxiety and restlessness very great.

On June 4th there were the same symptoms, and a further aggravation of them; the stethoscope showed slight tubercular infiltration at the summit of both lungs, most advanced on the right side; indolent, however, in both. Tuberculosis affecting the abdomen as well as the chest was for a time suspected, and *Cod-liver Oil* with *Opiate* injections were given.

June 8th.—Conjunctivæ much injected. Nostrils very red. Mouth and lips much excoriated, and a source of great distress. Tongue red and sore. Uneasiness in gullet, some sore throat, tickling irritation at top of windpipe, and hoarseness. Anus excoriated. Pain in stomach; urgent thirst; want of appetite; frequent vomiting; tenesmus, griping, and diarrhœa; hiccup; intense anxiety, restlessness and general distress. Pulse usually above 180 and feeble. Stools had been ascertained by the microscope to contain pus-globules and blood-discs for three days before.

On June 10th urine, which was scanty, high coloured, and high in density, was found to be albuminous, and to deposit blood-discs and casts of the uriniferous tubes of the kidneys.

On 13th face and arms presented an eruption which put on the characters of eczema. The symptoms otherwise continued much the same, and still, as from the first, they presented a paroxysmal tendency in point of severity.

On 14th a metallic deposit was obtained on copper, from the urine, by Reinsch's process. *Ammonio-Citrate of Iron* was given, and gave relief. The pulse which had been 160 fell by the 20th to 120. Countenance seemed more sunken, and restlessness was excessive in spite of *Opium*.

On 23rd she became again worse; restlessness and weakness were extreme; pulse feeble and intermitting; edge of tongue ulcer-

ated, and palate covered with papulae or pustules; hands cold and moist; vomiting severe; diarrhoea less so. To-day she first complained of a sense of stiffness, numbness, and tingling, which she had felt in the arms for two or three days before.

On 22nd *Arsenic* was found in urine.

On 24th the albumen had disappeared from the urine.

On 26th all symptoms were worse, especially the vomiting, and tingling and numbness of hands. Pulse 144 or 150, and very small and weak. She was evidently sinking. In the subsequent night she was seized with paroxysms of tetanic spasm, gradually increasing in severity and duration, and at length becoming almost incessant. Died at 10.30 a.m. next day, in full possession of her mental faculties.

Post-mortem next day.—Slight tubercular infiltration in apex of each lung, and in the left a small cavity. Trachea and large bronchial tubes much injected and red. Heart small and pale, otherwise healthy. Liver slightly enlarged, saffron-coloured, friable, fatty. Interior of stomach slightly vascular in its greater curvature; smaller curvature presented groups of small vessels gorged with blood, so numerous at its larger end as to render the redness almost universal and like a sheet of blood under the mucous coat, which was soft and friable. Duodenum was vascular internally, and full of black matter. Jejunum much in the same state. Ileum was redder still, and throughout lower third denuded of its mucous coat in many patches, varying in size from a shilling to a crown, and here and there involving its whole circumference. At the latter points the peritoneal coat was bare, thin, and very easily torn. Many mesenteric glands were prominent and black. Colon everywhere vascular; numerous small ulcers pierced the mucous coat in the ascending and transverse portions; and the rectum was similarly but less extensively affected. Pancreas somewhat vascular. Kidneys and spleen congested.

Arsenic was found in the liver, heart, lungs, bowels, &c.

183. *Edinburgh Medical Journal*, 1859, vol. v, p. 80.

Dr. King, of America, poisoned his wife with *Arsenic*. The symptoms were:—Always very sick and thirsty; the vomit was dark green, and the vomiting lasted generally fifteen to twenty minutes. She died comatose.

184. *British Medical Journal*, 1873, vol. ii, p. 700.

By Dr. Clement Walter.

A lady, from exposure to *Arsenical* wall-paper, suffered from malaise and headache, &c., with an eruption of boils which refused to heal. Removal of the paper relieved her.

185. *British Medical Journal*, 1873, vol. ii, p. 772.

By Dr. J. Liddell.

Arsenical papers cause dull griping pain in bowels, nausea and vomiting, loathing of animal food, and frequent diarrhoea.

186. *British Medical Journal*, 1855, p. 1119.

Additional symptoms in Wooler's case [see case above, No. 182.—E. W. B.].

Dr. A. S. Taylor's report of *post-mortem*:—In some parts the small intestines were a dark red; in one part the mucous surface presented a patch of ulceration, the surface was red round the patch. In one part of inner surface of rectum there was a large patch of ulceration; the mucous membrane was inflamed, and presented black marks (the latter due to *Iron*).

Dr. Jackson reports:—General soreness of the breast and body, and faintness; dryness of mouth and throat; stools sometimes of a putty colour.

Mr. Henzell reports:—On May 16th, uneasy sensations at stomach-pit; nausea and vomiting; pulse 110 to 120. On June 4th itching of skin. The urine from beginning of June till the day before her death was neutral or faintly acid, and contained a large quantity of earthy phosphates and a slight excess of urea. There was an eruption on face, neck, breast, and arms, of small slightly inflamed pimples. On 22nd the lining membrane of nostrils was red and inflamed.

Dr. Haslewood reports:—On June 8th there was eczema on the patient's face; nose and mouth in a state of irritation. On 23rd she complained of tingling in hands, and the muscles of the forearm were found to be harder and stiffer than usual.

187. *Lancet*, 1823-4 (vols. i—ii), pp. 156-8.

By Sir Astley Cooper.

A man had *Arsenic* applied to the eye for a fungus, by Mr. Lucas. In three days he had pain in stomach. On continuing

the applications it became excessive; convulsive tremor of muscles followed, and he died. The stomach was found to be in the highest degree inflamed.

In another case *Arsenic* was applied to a wound on the shins; paralysis of arms and lower extremities followed.

188. *Edinburgh Medical Journal*, 1858, vol. iii, p. 391.

By Dr. Robert Paterson.

1. A girl took *Arsenic*. The family were roused at night by her groans. She was sick and in great pain. On the arrival of the physician she was vomiting severely; skin covered with a cold clammy sweat; pulse quick and feeble; this was about 11.30 p.m. Milk was given, and an emetic of *Sulphate of Zinc*. During the night she continued to vomit at intervals; had much pain, but said little; next morning early there was abdominal pain and tenderness to touch. In the course of the day she continued to vomit frequently and severely, everything taken being immediately rejected; diarrhœa also occurred, with great prostration of strength; hollow, sunken eyes; hoarse voice; great thirst. In evening the symptoms continued the same; occasional slight sleep with muttering delirium, during which she frequently repeated the name of her lover. She died quietly about 7 a.m. next day. She was five months pregnant.

2. A man of middle age took *Arsenic*. He was found dying, lying on the floor, surrounded by what he had vomited and purged; quite prostrate; pulse very rapid and nearly imperceptible; surface of body quite cold; eyes hollow and dark round eyelids; voice faint; unquenchable thirst; much sickness and occasional vomiting; burning pain in epigastrium and over upper part of abdomen, especially when pressed; occasional spasmodic twitchings of muscles of limbs; he died.

3. A girl, æt. 19, was found about 9 p.m. writhing in agony. When spoken to she turned away her head and was silent. There were extreme sickness and pain, referred to upper abdomen, but not much increased on pressure. *Coffee* and large quantities of milk were given, and an emetic of *Sulphate of Zinc*, which acted well. The vomiting continued to the last; constant dreadful suffering at epigastrium; towards morning the voice was weak and low; countenance anxious; eyes hollow, and when quiet half closed; skin cold and clammy; pulse weak and frequent; bowels

unopened. After a drink of milk or a severe fit of vomiting she fell back in bed utterly prostrate, and after lying quiet for a time began to toss about her legs and arms, to complain of much pain and sickness, which ended in vomiting and prostration as before. She remained thus till 1 p.m., when she rather unexpectedly died, sixteen to nineteen hours after taking the poison.

Post-mortem in thirty hours.—Lining membrane of stomach generally very red and injected, with very numerous stellated patches of vivid red leading to a dark tint; in the centre of some of them was noticed a minute clot of blood, in others a fragment of *Arsenious acid*. In some parts the membrane seemed very soft and somewhat pulpy.

4. A woman, æt. 35, took *Arsenic*. She was found in bed early in the evening suffering much from sickness, vomiting, and purging. Continued to get worse all night. Next morning the symptoms were very much like those of cholera except that the vomited matter was like thin coffee grounds. She was extremely sullen and silent, would not answer any question, and would rather suffer thirst than ask for drink. Pulse feeble, tongue white, epigastrium tender. Had *Opiates* and *Mustard* cataplasms to stomach. Next day symptoms much aggravated; the abdominal pains especially had increased, it being now extremely tender to touch. Pulse much weaker and more rapid; countenance had assumed a sunken aspect and dark leaden hue. Everything taken into the stomach was immediately rejected, and the purging was also frequent with pain and straining. This state continued with little variation till next morning, when she died convulsed, sixty hours after the symptoms were first noticed.

Post-mortem next day.—Great evolution of gas on opening abdomen, and the peritoneal covering of all the intestines was darker than usual. Lining membrane of stomach was red, especially posteriorly, with numerous dark points and patches interspersed through the redness. It contained several ounces of a brownish tinted fluid, with dark stringy mucus and yellowish particles floating in it. The lining membrane of the whole alimentary canal was redder and more vascular than usual. The liver was enlarged and serosed [*? cirrhotic*.—E. W. B.].

5. A middle-aged woman took *Arsenic*, and was found ill at 3 p.m., but she would not at first speak or take anything. Afterwards she took what was offered. There was great pain in

stomach ; frequent severe vomitings ; occasional hiccup. She continued about thirty-eight hours in this state ; was then seized with occasional slight convulsive attacks, and died in a convulsion upwards of forty hours after she was first seen by the neighbours.

6. A girl took *Arsenic*. She was found vomiting severely. Was exceedingly sullen and determined, and would not answer any other question than that she was thirsty. An emetic of *Sulphate of Zinc* was given, followed by *Carbon* in milk and coffee, and afterwards the *Hydrated Sesquioxide of Iron*. The vomiting continued occasionally in evening, but there was no other change in the symptoms. Next day vomiting had much abated, but there was some tenderness at epigastrium and upper part of abdomen. Pulse had slightly risen. Still sullen, and would not answer a single question as to taking the *Arsenic*. She complained of a disagreeable numbness and tingling of her legs and feet, and this symptom was the only one complained of for a few days. For about ten subsequent days the symptoms varied as follows :—Vomiting subsided ; thirst continued ; throat became raw ; abdominal tenderness increased, and *Blisters* were applied ; pulse rose in frequency but afterwards subsided ; considerable diarrhœa and difficult micturition ; she was convalescent in twelve to fourteen days, till which time she continued morose and sullen. She took a very small dose of *Arsenic* every day, which produced griping pains in abdomen and diarrhœa, after which she took a teaspoonful at once.

189. *British Medical Journal*, 1873, vol. i, p. 698.

By Mr. William Mitchell Clarke. Remarks on *Arsenical* papers and colours.

In one group where the poison merely modifies some other disease, the most marked effects are sickness and vomiting, sore throat, sore eyes, and occasionally eczema and diarrhœa.

In a second class there are nausea or sickness, troublesome cough, capricious sore throat, and redness or soreness of conjunctiva.

In a third group nervous symptoms predominate ; there are headache, prostration, and marked restlessness and excitement at night ; generally also more or less decided gastric symptoms, with especially a very coated tongue.

followed by a poultice, and took *Black Drop*, *Mercury*, and *Chalk*.

24th.—Vomiting continued every hour during the night; somnolency during the interim; the vomit was still greenish; bowels freed by the injection; no urine; face copper-coloured, or rather a dark reddish-yellow; the remainder of body of a greenish-yellow, conjunctivæ same colour; white objects, however, do not appear coloured; pulse 80 and strong; slight tenderness in epigastrium still; troublesome cough. Continue the same remedies, with diluent drinks; also ten *Leeches* to epigastrium, followed by a *Mustard* cataplasm. Evening: vomiting not so frequent, now every two hours; has passed a tablespoonful of blood from urethra. Applied *Blister*, which did not rise though remaining on for sixteen hours.

25th.—Vomiting less frequent; pulse 76; occasional hiccough; no stool or urine; took a purgative of *Sulphate of Magnesia* in *Infusion of Roses*; also an enema.

26th.—Stomach has retained mixture; jaundice disappearing; bowels freely relieved; discharges loaded with bile; has vomited three times during day and night; no urine. To take *Bicarbonate of Potass*, *Cream of Tartar* water, and *Syrup of Roses*.

27th.—Jaundice nearly gone; no fever; considerable weakness; no pain; has vomited once during night the same coloured fluid; was exceedingly restless; great thirst; bowels natural; no urine; face somewhat œdematous; slight ammoniacal odour from breath; pulse 80; somnolency during the day. To have a hip-bath; to take *Nitre*, and *sweet Spirit of Nitre*.

28th.—Restless night; face slightly œdematous; tongue somewhat enlarged, and on its right side a deep irregular ulcer; breath has an ammoniacal odour; no urine found in bladder, though the catheter was used; two stools during night; nausea, and fulness in epigastrium. A liniment of *Vinegar of Squills* and *Muriate of Iron* to be applied to lumbar region.

Evening, somnolency increasing; loss of memory; face œdematous. Took *Lime water* and milk.

29th, 9 a.m.—Has slept occasionally; seven stools; quantity of urine exceedingly small, depositing a little blood; has drunk only one pint; night more comfortable; pulse 102; same odour from breath; a second tubercle, pointed and dark, on tongue; palpitation. Noon, great weakness, but in other respects

better; pulse 76; œdema increased. 4 p.m., has commenced sinking; died a little before 7 p.m.

Post mortem in thirty-six hours.—Universal anasarca; integuments of abdomen slightly green, particularly at the sides; abdomen greatly distended with gas; lungs, on opening the chest completely collapsed; a fluid to the amount of two pints, of a reddish-brown colour, without odour, was effused into the chest; heart pale and flabby, not containing blood; a little fluid in pericardium. Liver of a deep indigo colour; gall bladder distended with bile; kidneys of deep indigo colour all through, the left particularly large, the internal structure resembling much the spleen in appearance, the right smaller and firmer; two distinct patches of inflammation in the greater curvature of the stomach; the mucous membrane easily separated; bladder empty. Arachnoid somewhat vascular, containing air bubbles underneath; the substance of the brain presented bloodless dots; no fluid in ventricles.

A woman took 2 ounces of *Arsenious Acid*, and died in twenty-four hours. It caused violent irritation of the alimentary canal, excessive general depression, and slight cramps in the lower extremities.

Five persons took *Arsenious Acid*. They soon had vomiting and symptoms of irritation of the alimentary canal. One elderly woman had slight vomiting and excessive prostration of strength; and died in six hours with little suffering. The *Post mortem* showed only increased vascularity of stomach in two or three points.

195. *Edinburgh Medical Journal*, 1860, vol. v, p. 961.

Paper by Dr. Prosper de Pietra Santa, in *L'Union Médicale*, September 16th, 1858, on the disease of workers in *Schweinfurt Green*, vesicles, pustules, *plaques muqueuses*, and ulcerations on the parts exposed to the poison (fingers, toes, genitals, and especially scrotum).

196. *Edinburgh Medical Journal*, 1860, vol. v, p. 1137.

Heisch's paper quoted. See below.

197. *Medical Repository* (New York), 1802, vol. v, p. 43.

By Dr. S. Barnum.

February 16th, 1861.—A woman took in solution 2 ounces of

White Arsenic, minus a tablespoonful or more which remained undissolved. In an hour she was constantly retching to vomit, and sometimes vomiting, with violent spasms of stomach and bowels; weak and quick pulse; frequent dark bloody diarrhoea; frequent coldness of extremities. Took an emetic of *Sulphate of Zinc* which acted; followed by weak solutions of *Carbonate of Potash* in warm water; she soon vomited the first dose, but retained the next better. Next morning she was walking about her room. She had then no pain, but felt very weak, and complained of soreness of stomach. Recovered.

198. *Medical Record and Monthly Advertiser*, 1842, pp. 40, 110. Toogood's and Brodie's cases quoted. See below.

199. *Indian Annals of Medical Science*, 1857, vol. iv, p. 657.

By Dr. F. Mouat. [This is the *original* account, but is *correctly* given above in No. 120.—E. W. B.]

200. *Edinburgh Medical Journal*, 1858, vol. iii, p. 961.

By Dr. James Begbie.

Reference to Bardsley's *Medical Reports*. See below.

Arsenic in continued moderate doses, say five drops of the *Liquor Arsenicalis* largely diluted, two or three times a day, will generally within eight or ten days cause increase of heat and dryness of skin, with acceleration of pulse, followed by sense of heat and itchiness of eyelids, to which succeed swelling and tenderness; the conjunctiva becomes inflamed, the eye sensitive to light, and the orbit surrounded by a dark discoloration. The tongue is coated with a white silvery film, like that produced by touching its surface with a weak solution of lunar caustic. The throat becomes dry and sore; the gums swollen and tender; and if the remedy is persisted in, salivation ensues. Nausea, vomiting, diarrhoea, nervous depression, faintness and tremor, are added.

With the earlier signs of its operation a marked increase of the quantity of urine occurs, not infrequently with a free deposit of lithates. One of the earlier signs is a minute papular rash, which by-and-by assumes the form of delicate brownish scales, giving the skin an unwashed appearance; this has been most observed over those parts of the skin which are protected from

light by clothing. Valleix and other French writers remark, a contraction of the extensors of the legs as its effect. Romberg's remarks quoted. See below.

In a case of chorea the *Arsenical* solution produced a copious crop of boils.

201. *Edinburgh Medical Journal*, 1864, vol. x, p. 116.

By Dr. D. Mc. N. Parker.

A man, æt. 30, had been eating *Arsenic*, at first in minute doses, then in larger ones, but the exact quantity was uncertain. On November 20th, at 10.30 p.m., he was in bed with intense pain in region of stomach, not materially increased by pressure. Abdomen was much swollen and tympanitic, incessant vomiting, intense thirst, with constant desire for cold water, which, even in the smallest quantities, could not be retained. Pulse was 110, regular, but soft and weak; skin cool and moist; tongue moist, and covered with a thin white fur; urine scanty; countenance anxious; features contracted and face thin. Complexion unnatural, and by gaslight a dark greenish hue. For three or four weeks had had dyspeptic symptoms, and frequently had pain after meals, and could use little else than oatmeal porridge or other light farinaceous food. The 16th of November he walked twelve or fourteen miles, and in the evening complained of fatigue. On night of 17th he rested badly, and vomited frequently. He thought the genitals had been excited by the *Arsenic*. He had had a metallic taste in mouth and throat for some time. On the previous evening he felt very much worse than usual, and had complained of symptoms of the lungs, which were found to be congested. He now took *Bismuth* and *Opium*; and *Turpentine*, *Opium*, and *Mustard* externally.

21st.—Morning, better. No abdominal pain or vomiting; had slept but little. Continued treatment. Mucous membrane of anus was red and irritable as far within the sphincter as could be discerned. Later in the day the pains and vomiting returned, when he had *Opiate* injections, with *Prussic acid* and *Laudanum*.

22nd, 7 a.m.—Much worse; had had no sleep. Burning pain of stomach, and vomiting had continued all night. Abdomen more distended. Countenance more hippocratic, and complexion darker. Pulse hardly perceptible, at times it could not be felt; respiration 22. Tongue slightly furred and white, but moist; skin

cold; neither nourishment nor medicine could be retained in the stomach. Gave *Bismuth* and *Opium*, and a *Blister* over stomach. At noon the rectum would not retain the nourishment given. Though pulseless, when exempt from pain as he was at times for a few minutes, he said he felt quite well, and strong enough to walk out in the street. About an hour before this he rose from bed, and unassisted went down stairs and then returned. At 10 p.m. there was no perceptible pulsation in radial, temporal, or subclavian arteries. The femorals gave a very feeble impulse. The heart's sounds very indistinct and confused, could just be detected by the stethoscope, but its pulsations could not be counted; respiration 22. No dyspnoea. He conversed freely in a firm tone of voice. He rose from the bed unassisted and went to the night-chair, but could void neither faeces nor urine. Tenesmus and strangury were exceedingly troublesome. The skin and extremities were cold. Pupils rather contracted. Only a few drops of urine had been voided during the past twenty-four hours. The intense thirst had passed away, as also had the irritability of the stomach.

23rd, 8.30 a.m.—Had passed a most distressing night from pain in region of stomach, and from painful but ineffectual attempts to relieve the rectum and bladder; not even the smallest quantity of urine had been passed. The *Opiate* injections were not retained. He now required a bed-pan, being unable to rise. Had no desire for nourishment, but had taken some beef tea and retained it. Since 6 a.m. had been free from acute suffering, and dozed a good deal. His mind had wandered much. Pupils somewhat contracted. Tongue clean and moist. Abdomen very tympanitic. Respiration 20, and not laboured. Extremities and skin dry and very cold. No pulsation perceptible in any of the arteries. A slight confused action of heart could with difficulty be detected. On being roused, says "he feels quite well, and will never be caught in such a scrape again." He grew weaker, and talked more incoherently, till 10 a.m., when he died.

Post mortem.—Sanguineous fluid commenced to flow from mouth and nose in large quantities a few hours after death. In twenty-four hours the whole body was enormously swollen and disfigured. The abdomen was distended to its utmost limits. All the voluntary muscles were excessively rigid. Great lividity of countenance; skin of face had a glistening appearance, owing

to emphysematous distension and excessive venous congestion. Both emphysema and capillary congestion were general on the surface of the body, and air could be freely detected by the touch wherever sought. Penis and scrotum were black and swollen from decomposition and gaseous distension. On puncturing these parts and making pressure the confined air or gas escaped through the venous organs, in rapidly succeeding bubbles. The *sectio cadaveris* was made twenty-four hours and a half after death. Scalp and pericranium exceedingly congested, and the vessels contained air. The membranes and surface of cerebrum in the same condition. Membranes firmly adherent to each other, and to cerebral surface at point of junction of the two parietal with the occipital bone, extending continuously down through the fissure, dividing the cerebral lobes to the tentorium cerebelli. Brain was unusually firm and resisting to the touch. Congestion was confined to its surface and the walls of the ventricles, which latter contained a small additional amount of fluid. Corpus callosum was unusually soft. Sinuses and vessels of pia mater contained a quantity of air, which escaped in bubbles when these were opened. Blood of brain, as of the whole body, black and very fluid. Pericardium contained two ounces of fluid. Left ventricle largely hypertrophied and firmly contracted. Its muscular fibre was much more dense and hard to the touch than is usual in cases of hypertrophy. Left auricle also empty and contracted. Walls of right side of heart attenuated; auricle full of very dark liquid blood; ventricle collapsed and empty. Lungs congested throughout, perfectly engorged posteriorly. About two quarts of fluid in peritoneal cavity. Stomach externally not much changed; internally, but slightly congested over its first or œsophageal half; the congestion increased as the duodenal end was approached. Its mucous membrane was softer than natural. Between the mucous and muscular coats air was freely distributed, and could be moved from place to place by pressure. Patches of extravasated blood were also numerous between these two coats. Small intestine was inflamed or congested throughout. Duodenum almost black; the colour became lighter and the congestion less as ilio-cæcal valve was approached. Many large marks of extravasated blood beneath the different coats and on the mucous surface, the largest being beneath the peritoneal covering of the ileum. Large intestine was lighter in hue, but

yet considerably congested, with here and there small patches of extravasated blood in its cells. Rectum inflamed from its commencement, mostly near the sphincter. Liver of natural size, mottled, of a very peculiar dark greenish-blue colour throughout its entire substance, and engorged with black fluid blood. Gall-bladder full of black bile. Spleen loaded with blood, and of the same colour as liver. Kidneys very much congested. Bladder empty and contracted; its urethral orifice congested.

For the last five months the patient's daily dose was probably not less than two or not more than three grains.

202. *Dublin Medical Press*, 1840, vol. iv, p. 371.

Extract from *Londonderry Standard*.

Arsenic caused sudden and violent vomiting terminating in abortion and afterwards death.

203. *Dublin Medical Press*, 1839, vol. ii, pp. 81, 97.

Report of *Royal Academy of Medicine of Paris*, July 30th, from *L'Experience* Aug. 1st, 1839. See also *La Gazette Medicale*. Case referred to by M. Gendrin in *Journal Generale de Medicine*, 1823.

M. Emery said that *Arsenic* when given to patients in $\frac{1}{4}$ -grain doses caused frequent pulse, heat of surface, and acute pain in region of heart. He had occasionally noticed paralysis of the extensor muscles of the hand, the flexors remaining unaffected.

204. *Dublin Medical Press*, 1843, vol. ix, pp. 52-8.

Report of the *Surgical Society of Ireland*.

By Dr. Mitchell.

Fifteen children ate sweetmeats coloured green with *Arsenic* and *Copper*. The eldest was completely collapsed, cold extremities, total imperceptibility of pulse. He had vomiting severely, for upwards of an hour before, a green slimy substance mixed with solid material. The others were suffering in like manner. Three had jaundice for more than a fortnight.

205. *Dublin Medical Press*, 1843, vol. x, p. 69.

By Dr. John Popham.

A young man took a teaspoonful of *Arsenic* in a glass of grog. In a few minutes he had excruciating pain in the stomach, with

other symptoms. The stomach-pump and *Peroxide of Iron* were used. After this he seemed much exhausted and had an attack of rigors. He complained of epigastric pain and vertigo, with dry red tongue and thirst, but the burning sensation had been relieved. The subsequent symptoms were light, and were mostly headache, pains in legs, and epigastric tenderness.

206. *Dublin Medical Press*, 1845, vol. xiii, p. 61.

From the *Historical Register* (London).

A man manufactured *Arsenical* candles. His hands were contracted and he was frequently sick during the three months he was at work. At last the *Arsenic* entered the hand, the skin being broken. His left hand and forearm were swollen; also the left axillary glands. The hand was inflamed. Purple patches gradually covered his arm and side. He died.

207. *Dublin Medical Press*, 1846, vol. xvi, p. 37.

From *Gazette Medicale de Paris*.

M— was slowly poisoned by *Arsenic*. He had shivering, cold perspiration, great itching in extremities, and at length considerable emaciation. He also vomited. After death the lower limbs were found contracted, and the rigidity so great that it was impossible to remove the clothes completely.

208. *Dublin Medical Press*, 1846, vol. xvi, p. 186.

Mary C—, of Wrexford, poisoned several persons with *Arsenic*. The only symptom given besides sickness and retching is that one lay on his belly on the bed while retching.

209. *Dublin Medical Press*, 1846, vol. xvi, p. 261.

From a memoir by Tiersot, of Bourg.

A young woman swallowed some *Arsenic*. In five or six hours she had violent colic, extreme prostration, and tenderness of epigastrium. Other cases given in original.

210. *Dublin Medical Press*, 1852, vol. xxvii, p. 63.

From *Chambers's Edinburgh Journal* on *Arsenic-eating*.

If *Arsenic-eating* is left off, the person has feeling of general discomfort; perfect indifference to all surrounding persons and things; great personal anxiety; want of appetite; constant feeling of the stomach being overloaded at early morning; un-

usual degree of salivation ; burning from pylorus to throat ; cramp-like movement in pharynx ; pains in stomach ; and especially difficult breathing.

211. *Dublin Medical Press*, 1846, vol. xvi, p. 198 ; 1848, vol. xx, p. 312 ; 1849, vol. xxi, pp. 5, 78 ; 1844, vol. xi, p. 108 ; 1850, vol. xxiii, p. 241 ; 1851, vol. xxvi, p. 72 ; 1857, vol. xxxviii, pp. 101, 215 ; 1856, vol. xxxv, pp. 46, 60 ; 1858, vol. xl, pp. 120, 157, 212 ; 1857, vol. xxxvii, p. 133 ; 1858, vol. xxxix, p. 55 ; 1852, vol. xxviii, p. 227 ; 1855, vol. xxxiv, pp. 409, 198 ; 1859, vol. xli, p. 21 ; 1860, new series, vol. i, pp. 59, 360 ; 1860, new series, vol. ii, pp. 388, 405 ; 1864, new series, vol. x, p. 176 ; 1865, new series, vol. xii, p. 305.

Cases of Fox, Clegg, Traill, Christison, Wooler, Godfrey, Watson, Trend, Whitehead, Shipman, Bryant, Bigg, Metcalfe, Parker, Wheatcroft, Hind, Jackson, Geoghegan, Paterson, Taylor, Hassell, Basedow, Schmidt, Heisch, Headland, and Mitchell, quoted : see above and below.

212. *Dublin Medical Press*, 1859, vol. xli, p. 280.

Poisoning of sheep at Newcastle, by *Arsenical* sheep-wash. Symptoms were, foaming of mouth, shaking of head, lying down. The arms and hands of the shepherds who washed them became sore, and mortified and sloughed.

The sheep which died were swollen and black.

213. *Medico-Chirurgical Review and Journal of Medical Science*, 1822-3, vol. iii, p. 203, and 1824, vol. iv, p. 221.

Murray's and Edward's cases, see above and below.

214. *Medico-Chirurgical Review*, 1828, vol. viii, p. 265.

By Dr. John Elliotson.

A woman aged about 60 took some *Arsenic*. In about an hour she was brought in in a state of exhaustion ; pulse scarcely perceptible, skin cold, pupils fixed ; incapable of answering when spoken to ; pressure in epigastric region gave excessive pain, under which she would writhe and utter some imperfect sound ; tongue dry ; appeared to wish for drink constantly. The washings of stomach returned tinged with blood. Died.

215. *Medico-Chirurgical Review*, 1832, vol. xvii, p. 162.

From *Journal Univ. et. Hebdom.*

A man and woman, two hours after taking *Arsenic* in food, were seized with sickness and vomiting, which by degrees ceased, and did not return till the following morning. Purging now superseded, and the stools were inodorous and unhealthy. Next day, vomiting was attended with much anxiety and great prostration of strength, and a sensation of tightness at throat. The next day another woman who had also eaten of the food became dangerously ill, with extreme exhaustion, feeble whispering voice, pulse scarcely perceptible, involuntary twitchings of the muscles, vomiting and painful purging; she died in thirty-six hours after the first attack. Another man who ate the food had soon afterwards violent vomiting and purging, extreme thirst, universal tremors, succeeded by a state of coma. He slowly recovered. The first two lingered, the man for thirteen days and the woman for four weeks. Before death both suffered much from a sense of burning in throat, dysphagia, fever, apthous ulcerations on mouth and tongue, and remarkable insensibility of hands and feet. *Post mortem* in these two revealed marks of vivid inflammations of stomach and duodenum, and a morbid development of the *glandulae Peyer*i and *Brunner*i in the ileum.

216. *Medico-Chirurgical Review*, 1833, vol. xix, p. 504.

Case (read at *French Academy of Medicine*) of poisoning by vapours from the explosion of a mixture of *Arsenic*, *Nitric acid*, and *Cobalt* [omitted as doubtful.—E. W. B.]

217. *Medico-Chirurgical Review*, 1834, vol. ii, p. 62.

Review of *Illustrations of the Effects of Poisons*, by George Leith Roupell, M.D., 1833. See original work.

218. *Medico-Chirurgical Review*, 1842, vol. xxvi, p. 569; 1837, vol. xxvii, p. 263; 1827, vol. vii, p. 379; 1841, vol. xxxv, p. 227; 1839, vol. xxx, p. 612; 1835, vol. xxii, p. 463.

Cases by O'Reilly, Taylor, Christison, Deville, and Riley, quoted. See above and below.

219. *Dublin Quarterly Journal of Medical Science*, 1851, vol. xi, p. 68, and *Dublin Medical Press*, 1850, vol. xxiii, p. 241. By Dr. T. (†. Geoghegan.

[The latest is the most complete account, but the earlier contains some additional symptoms, which I have added in their proper places.—E. W. B.]

(1.) A man, aged between 25 and 30, took *Arsenic* in food. In about an hour he had nausea, feeling of distension of stomach, with great pain as if there were a *fire* within him, burning in mouth, and subsequently vomiting of a greenish fluid; to these were speedily added burning in throat and along œsophagus, urgent tenesmus, with slight discharge of mucus, excoriation of anus, frequent urination, pain in bladder. On fifth day he was hoarse, and had pimples or vesicles round mouth, and during the latter part of his illness (which became gradually more aggravated) there were coldness of the surface, sordes on teeth, and livid circle round eyes, failure of vision, and discharges of a bloody matter from stomach. Throughout he had constant excessive thirst, great restlessness, bloodshot conjunctivæ, and anxious countenance; frequent priapism. He died in eleven days and a half.

Post mortem in forty-six days. Mucous membrane of stomach was a uniform light reddish brown, firm, and yielded on traction a flap of half an inch in length. The *washings* of the stomach were dark reddish grey, turbid, and containing in suspension a quantity of silvery-looking and apparently fatty particles. The inner surface of duodenum, which was dark brown, was smeared with a thick substance of unctuous consistence, of a dark purple, and evidently containing much hæmotosine. On a second exhumation, seventy-four days after death, mucous membrane of jejunum and ileum presented patches of pseudo-morbid staining of various shades of brown and black, also several patches of vivid brownish redness, apparently inflammatory. Mucous glands in lower part of ileum appeared as slightly raised brown dots. Mucous coat was softened and copiously smeared with a viscid, greasy-looking, reddish-black material containing blood. Mucous membrane of great intestine was reddish brown; in the descending portions of colon lighter; in rectum reddish grey, and presenting generally numerous small circular abrasions, with coloured borders, formed by the softening and removal of the mucous glands. The contents were similar to those of the small intestines. Liver very soft, fœtid, and internally of a uniform, rich olive colour; kidneys and spleen also softened; lungs scarcely so, but shrunken, lobuli distinct, parenchyma rather dry, and dark purple red; heart flaccid and destitute of blood. *Arsenic* was discovered in liver and slightly in contents of colon.

(2.) Six persons (five men and one woman) ate a cake into which a teaspoonful of *White Arsenic* had been put. Another woman, who had made it the previous day, ate some and had vomiting, which persisted the greater part of the night. The men were of the ages of 47, 45, 22, and 21, and the female aged 12. The eldest died after an illness of thirty-six hours. The rest, who ate only a small quantity, were almost immediately seized with severe vomiting. When seen ten hours afterwards, three of the five who recovered (one of whom had previously taken an emetic) were free from pain, but had heat and dryness of skin, constriction of throat and œsophagus, tightness and dryness of the chest, thirst, and a quick, wiry pulse. Next day, though most of these symptoms persisted, with the addition of whiteness of tongue, they left the hospital. On third day they were attacked with a miliary eruption, confined to the forehead, wrists, and feet. In the fatal case vomiting supervened in five minutes, and was frequently repeated. In one hour and a half an emetic was given. In twenty-five hours after taking the poison he was admitted in a state of hopeless collapse; countenance not much sunken, surface cold, pulse scarcely perceptible. The vomiting had ceased, but there were frequent calls to stool, with the discharge of small quantities of a brick-red fluid; little thirst. He died eleven hours after admission.

Post mortem in eighteen hours. Neck and scrotum very emphysematous, and twenty-two hours after death the subcutaneous areolar membrane generally was the same (weather quite cool). Œsophagus had some patches of vascularity, and its epithelium, which was emphysematous, was smeared with a little bloody mucus. Lining membrane of stomach coated slightly with a bloody fluid and of a rather uniform dark-red colour, with scattered blotches of black extravasation; mucous membrane was not softened except at the splenic end, and had numerous erosions, some of a rounded form, but the majority forming long, narrow, sinuous, and intersecting furrows, having a defined edge, destitute of hardness or of special coloration, and exposing the submucous coat. They conveyed to the eye the impression that a narrow stream of some corrosive fluid had flowed in various directions along the inner surface of stomach. The submucous coat was rather injected. Mucous membrane of the rest of digestive canal was of a uniform chocolate-brown colour, apparently from imbibition.

tion of the contents. There was a good deal of submucous injection of the colon, the transverse and descending portions of which had a few small blotches of ecchymosis beneath the mucous surface. Anterior surface and margin of right ventricle of heart had blotches of ecchymosis beneath the serous membrane; none on endocardium or valves; muscular tissue of heart soft. Posterior part of both lungs much engorged with blackish, semi-coagulated blood, giving to the part the appearance of pulmonary apoplexy; the tissue broke down readily under the finger. Blood in great systemic and hepatic veins fluid; in cavities of heart and great thoracic vessels dark and coagulated, but in right ventricle and ascending aorta, semifluid. Numerous globules of oil and air were floating in the blood of the aorta, pulmonary vessels, and *venæ cavæ hepaticæ*. *Arsenic* was found in liver.

(3.) Mrs. L. D—, æt. 48, took *Arsenic*. She returned home drunk, and was attacked by vomiting, which continued during the night, with bilious purging and violent thirst. Next day vomiting and purging were less violent. Shortly before death expressed a wish to sleep. Surface of body and extremities was warm till a short time before her death, which took place seventeen hours after her return home.

Post mortem in twenty-two hours. Some lividity of posterior surface of body; *rigor mortis* well marked, and continued so for forty-one hours after death. Epithelium of mouth remarkably white and opaque; velum palati pale, with a macerated and wrinkled appearance. On opening the abdomen a most offensive, sickly, and rather fæculent odour was exhaled, which proved to be due to the stomachic contents, consisting of a quart of turbid, orange-coloured, and rather viscid fluid. Mucous membrane of body and splenic end of stomach had acquired a tolerably uniform orange colour by imbibition of the contents, accompanied in part by a tinge of redness, but without vascular injection; in the former part there were a couple of small petechial ecchymoses. The pyloric third presented three distinct blackish-red ridges, projecting at least a quarter of an inch above the adjacent surface, and crested with a white curdy-looking matter which adhered with considerable firmness, and proved to be *Arsenious acid* incorporated with mucus. These ridges were firm, and when the coating was removed, rough to the feel; they were formed exclusively of the mucous membrane, having blood incorporated

with part of its tissue. In the vicinity of the ridges the latter was thickened and indurated, yet but little altered in colour; there was also a circular blotch of adherent *Arsenic*; and beneath it a rough, fungous, and highly thickened mucous surface. The membrane of the splenic end was not thickened, and gave a flake of one third of an inch on traction; the pyloric end yielded one of an inch and a half. Mucous coat at pyloric end injected. Lining membrane of duodenum dark red. Small intestine contained a considerable quantity of thick material slightly coloured with blood, and mixed with white flakes. Large intestine contained a little thick uniform grey matter. Ramiform submucous injection of both small and great intestines. Right auricle loaded with black, firmly coagulated blood; a little in left auricle and right ventricle; two non-elevated blotches of ecchymosis, about the size of a pea, beneath endocardium of the latter. Posterior part of lungs gorged with dark semi-fluid blood, apparently extravasated in the tissue. Blood dark coloured, and quite fluid in the abdominal cava.

(4.) C. S—, a woman, æt. 25, took *Arsenic* in water. In a quarter of an hour there were stinging sensations in mouth and pharynx with giddiness; in forty minutes nausea, and flow of viscid saliva from mouth, with heat of fauces, stupor, small and frequent pulse. Relieved by the stomach-pump, and then complained only of slight headache. Vomiting soon after supervened, and lasted incessantly till death, which was preceded by much cramp of legs. Some purging. Died in nine hours.

Post mortem in nine hours. Papillæ of tongue very prominent; uvula and fauces corrugated and white. Peritoneal coat of stomach vivid red, its vessels not much injected; mucous membrane studded with small vivid red blotches or stellæ, arranged in serpentine intersecting lines, the intervening spaces of which were still more closely beset with minute red dots; two or three small patches, apparently of extravasated blood, were evident in body of stomach; membrane at pyloric end opaque; that of great extremity softened and a little swollen, more easily detached than natural. Contents: a quart of orange-coloured fluid turbid and viscid, with a little bloody mucus. Mucous membrane of duodenum reddish and swollen; mucous glands enlarged; yellow mucous fluid in ileum and duodenum. Some redness of mucous coat of transverse colon; submucous ramiform injection of great and small intestines. Colon contained a yellowish-white fluid of

starchy consistence. Gall-bladder contained a little bile; spleen granular and soft; ovaries dark-coloured; lining membrane of uterus and Fallopian tubes vascular. Some frothy fluid in larynx and trachea; lining membrane between the rings red; posterior part of lungs engorged, giving out a frothy fluid on section, and a purulent-looking one from the bronchial tubes; membrane of the latter red. Right auricle full of fluid blood; right ventricle and left cavities empty. Blood generally dark; but vivid red and in small quantity in aorta.

(5.) Four persons died from *Arsenic*; three after an illness of five and a half to seven hours, and one in fifteen hours. In one case which recovered after the lapse of a month there were partial paralysis of lower extremities and desquamation of cuticle. Their illness was characterised by nausea within fifteen minutes; vomiting, at first bilious, then bloody; burning pain in stomach; slight tenderness of epigastrium, and constant thirst; also flushed face, headache, and suffusion of conjunctiva; faintings, quick small pulse, and cold extremities.

Post mortem in forty-eight hours. Stomach and intestines inflated with air; in three there were very dark red patches on the mucous membrane; in one the lining coat presented a uniform sheet of the latter colour. Sub-mucous coat congested. The stomachic contents consisted of a small quantity of turbid brown fluid, in one case containing a good deal of altered blood. Brain (examined in one case) congested on the surface, and the lateral ventricles distended with limpid serum. The blood so far as examined was fluid.

(6.) Mr. R. G—, with six other persons, took *Arsenic* in food. They were all seized with bilious vomiting, &c. Mr. G— died in about twenty hours in a state of collapse. In some of the persons pustules appeared on the forehead. Two observed that in five to seven minutes after taking the food they had a burning in throat. Three calves which ate the food died. Six grains of *Arsenious Acid* were found in about a tablespoonful of the food. In one of the calves the lining coat of stomach was inflamed. The contents of Mr. G—'s stomach (7 fluid ounces) were of a feculent colour, of a rancid nauseous odour, and strong acid reaction.

(7.) C. R— took *Arsenic* in food. He became ill in three quarters of an hour, and died in eight hours. He had vomiting,

purging, tenesmus, hoarseness, pain in loins, and coldness of extremities. A woman, who took some of the food had, in about three quarters of an hour, vomiting, giddiness and thirst; sensation of burning in gums and tongue; on the cessation of the vomiting, purging occurred. She was ill for four or five days. Her infant, whom she suckled after taking the food, had purging next day.

Post mortem of C. R—, after three days.—Mucous membrane of stomach and upper part of small intestines and a patch in cæcum highly inflamed; stomach contained a thick red fluid. The latter in thirteen days was of the colour of coffee grounds, of a peculiar odour, strongly acid, and contained *Arsenious acid*. A large tract of mucous membrane of splenic end and body of stomach was of the same colour as the contents, the coloration terminating quite abruptly some distance from pylorus. Posterior wall of splenic end was a uniform red, with two blotches of extravasation, very readily removed by slight scraping, and leaving behind the appearance of erosion. Near pylorus was a fine punctated vascularity. Mucous coat of body and splenic end was much softened (from inhibition of the acid contents); that of pylorus thickened, and yielding a flake of more than two inches. Lungs congested. Blood in vessels generally, and in lungs, coagulated.

Case of Mr. R. Maguire, mentioned. Violent pains in the loins were complained of. (This case was tried at the Leitrim Spring Assizes, 1849).

(8.) A man took about 24 grains of *Arsenious acid* in tea. He at once experienced a very unpleasant taste, and in less than five minutes was giddy and sick; bloody vomiting and uneasiness in fauces succeeded, and he was somewhat ill for the next two days. A woman took about the same quantity, and very soon had violent retching and burning in throat. The same day she was found suffering from great headache, much suffusion, and some swelling of face; injected conjunctivæ, constant itching of eyebrows and forehead, white tongue with red tip, incessant thirst, great pain in stomach and bowels, shivering and coldness of the surface. After some hours there was bilious purging, which did not recur. Next day, in addition to the preceding, there was great difficulty of breathing, insomnia, and constant agitation. On fourth day there was a marked remission of all the symptoms, and she felt much better. This improvement

lasted only a few hours; she sank in a typhoid state four days and twenty hours after taking the poison.

Post mortem in thirty-six hours.—Externally, dark and desquamating areolæ of eyelids; sordes about mouth. On the inside of each cheek was an elevated spot of ulceration, covered with a yellow coating, and a partially red border. Epithelium of œsophagus was yellowish-brown. Peritoneal coat of stomach rose-coloured; mucous membrane at splenic end of a brick-red hue, showing scattered petechial ecchymosis, and covered with an open network of vividly red streaks. Rugæ well marked. Pyloric end yellowish-red; a small and solitary erosion of mucous membrane, which was generally of natural consistence, though a little swollen; contents, a thick bloody fluid, in small quantity; Mucous membrane of duodenum brownish-red; valvulæ conniventes darker, and in some places thickened, and showing petechial blotches. Jejunum and ileum had similar appearances, increasing in intensity in latter as it approached cæcum. Much submucous ramiform vascularity of cæcum and colon; ileo-cæcal valve much thickened; mucous membrane dark reddish-brown (less so in transverse colon). Some redness and petechial blotches in rectum. Pharyngeal membrane in neighbourhood of glottis deep red; that of trachea and bronchi vivid red, with frothy red fluid in latter. Posterior part of both lungs much congested with dark blood, giving on section an appearance almost amounting to extravasation.

(9.) Mr. and Mrs. P—, and their family, consisting of six persons, took *Arsenic* in food. The father, æt. 56, and a daughter, æt. 20, died after an illness of ten and a half days, and thirteen days and twenty hours, respectively. The rest, who were mostly under fifteen years, recovered, having been affected during periods varying from three to twenty-four days. They became ill, in one case in fifteen, in one in thirty, and in four in sixty minutes after taking the food.

The symptoms of the father were—*1st day*, green vomiting, hoarseness, and thirst, with a remission towards evening; *2nd day*, same; *3rd day*, no vomiting, but thirst; *4th day*, vomiting after eggs and porter; *5th day*, no vomiting, loss of appetite; *7th day*, vomiting, with occasional bloody purging and tenesmus, short cough, and difficulty of breathing, which latter continued till death; *8th day*, much vomiting, less purging, headache, great

weakness, loss of sleep; 9th day, purging more bloody, pain in stomach, tenderness in epigastrium, painful urination; 11th day, death. On the first three days and fifth and sixth days he went in a car to town to transact business. The daughter's illness was characterised by vomiting, latterly of a green insoluble bile, purging, and collapse; there was subsequently desquamation of the cuticle of the face, with hoarseness, and towards the close, small spots of purpura on neck. On the day before death there were cough and muco-crepitant râles (without dulness) in posterior part of lungs. She sank with typhoid symptoms.

Of the survivors, one had headache, and another giddiness, as the first symptom; and one did not vomit for six hours. One only had roughness of throat; one, vesicles about mouth; one had cough; one, bright green coating of tongue; one swelling of feet; two, partial paralysis (in one, of sensation in fingers, and in the other, of motion in the lower extremities); three had hoarseness; three, desquamation of cuticle, (some of hands, others of neck and nostrils); five had thirst.

Post mortem of Mr. P—, after forty-five hours.—Lining coat of œsophagus showed black spots, about six inches from stomach. Mucous membrane of stomach reddish-grey, with various shades of brown (from decomposition). A black patch of the size of a sixpence near cardiac orifice, and near pylorus several convex and slightly indurated spots of black extravasation, the altered blood on some of which could be easily wiped off, leaving behind a grey-coloured erosion. The membrane at splenic end was soft; the contents consisted of some slightly bloody mucus. Mucous membrane of upper part of duodenum thickened and granular. Some staining of lining membrane of jejunum from imbibition of contents, which were light brown, thick, and turbid. Mucous membrane of ileum in lower and middle part red, swollen, and somewhat softened, with a little petechial ecchymosis. Contents small and reddish-grey; moderate ramiform vascularity of sub-mucous coat of both small and great intestine. Liver very soft (patient had lived freely). Kidneys slightly congested. Mucous membrane of larynx and bronchi dark-red. Small quantity of coagulated blood in ventricles of heart.

Post mortem of Miss P—, in ten hours.—Rigor mortis well marked. Mucous membrane of stomach universally red (with an occasional tinge of orange), vividly so at splenic end; the

vascularity was chiefly of the fine punctated variety. Some florid petechial blotches occupied summits of rugæ; ramiform injection of submucous tissue, and of large blood-vessels of stomach; contents a thick orange fluid. Mucous membrane of duodenum olive, with tinge of red; that of ileum (especially at lower part) presented tracts of a dark purple, most intense on valvulæ, with some petechial blotches; the last few inches betrayed a mottled redness, with enlargement of mucous glands. Upper part of small intestines showed much submucous ramiform injection; the contents were orange-coloured and partly reddish. Lips of ileo-cæcal valve swollen and infiltrated; mucous membrane of cæcum vividly red, as was that of colon and rectum. In rectum a slight aphthous ulceration. Tubular portion of kidneys injected with dark blood. A little urine in bladder. Lining membrane of trachea and bronchi red; tubes contained a little bloody froth; lung dark, presenting posteriorly indurated, dark, friable masses of the size of a walnut, apparently of blood extravasated in the tissue, but yielding up this colour on maceration, which left behind a more solid structure than natural. The intervening portions of the pulmonary texture were red, engorged, and partly hepatized. Pericardium contained three ounces of amber serum. One of the carnes columnæ of left ventricle showed a small blotch of ecchymosis; a small quantity of coagulated blood, mixed with fibrin, occupied the ventricles. Blood in right auricle and great veins was dark and fluid, but coagulated on being removed, yielding a milky serum.

(10.) A woman, past middle age, took *Arsenic* and died in sixteen hours; having had vomiting, purging, and thirst.

Post mortem in a week.—Peritoneal coat of stomach had a diffused redness, and towards splenic end a brownish tint. Marked contraction of muscular coat about three inches from pylorus. Mucous membrane at splenic end was a mottled reddish-brown, covering a stratum of coarse ramiform submucous injection, soft, with a few petechial ecchymosis, and one or two erosions (of the size of a fourpenny piece), with an undefined border, which exposed the unaltered submucous coat. The body of the organ exhibited, as far as the contraction, an arrangement of dark, blackish-purple streaks of extravasated blood, deposited in the substance of a softened mucous membrane and readily removed by the nail, which exposed the sound submucous texture.

These streaks, which affected for the most part the direction of the long axis, were of trivial thickness, scarcely elevated, flattened on the surface, and made up of a close aggregation of irregular blotches. Amongst these lines were interspersed a few of the lighter-coloured petechial (fluid) ecchymoses observed at splenic end. The remainder of the mucous surface was of a brown-red, which ceased abruptly at the contractions, between which and the pylorus the membrane, where untinted with bile, was grey, and coated with viscid opaque mucus of the same tint. The mucous membrane generally was softened, not capable of being peeled off at splenic end, but yielding on traction in the body and towards pylorus flaps of a quarter and half an inch respectively. The submucous coat, except in cardiac region, seemed free from injection. The contents were twelve fluid ounces of a uniform reddish fluid, of the consistence of thin gruel, and depositing brown flocculi; this fluid had an acid reaction, contained *Arsenic*, and included a considerable quantity of insoluble hæmatosine. Mucous membrane of duodenum reddish, apparently a little thickened, and showed an oval ulcer of the size of sixpence, with a thick elevated edge, its surface exposing the submucous, and in the centre the muscular coat. (The patient had previously complained of pain in stomach, so it is probable that this ulcer was the result of antecedent disease).

(11.) Mr. J. B.—took *Arsenic* in food. Three hours after the meal (having retired to rest) he was seized with vomiting and shivering, which did not last long, but was renewed in morning, recurring when he drank; subsequently, burning in stomach, great tenderness of epigastrium, and cramps. On the last day, coldness of extremities, sunken countenance, failure of sight, and tympanitic belly. Died after illness of sixty-three hours.

Post mortem in forty-eight hours. Peritoneal root of stomach much injected; mucous membrane much inflamed, particularly at cardiac end. In this part there were streaks of coarse and dark ramiform submucous injection; numerous slightly depressed blotches of black ecchymosis of variable shape, larger towards cardiac end, scattered over surface, some of them surrounded by red areolæ. The membrane, at this point only, was much softened. The contents of stomach (acid to litmus) consisted of four ounces of a viscid turbid reddish-brown fluid, evidently

containing blood, and having a peculiar rancid and fœtid odour.

(12.) M. G—, æt. 56, took about 1½ oz. of *Arsenious Acid*, and died in twelve hours. The symptoms were, vomiting streaked with blood, purging, dark areolæ round eyes and mouth.

Post mortem.—Mucous membrane of splenic end and body of stomach had numerous slight elevated streaks, in the former rusty coloured (from the *Iron* given), in the body red, and covered by closely adherent patches of a brownish-white matter. Pyloric end showed two large round patches of elastic coriaceous fibrine closely adherent to the mucous membrane, which was found beneath much swollen, rough, and vividly red. The mucous membrane yielded on traction a flake of a quarter of an inch at splenic, and half an inch at pyloric end. Submucous coat had some ramiform injection at splenic end. Contents of stomach turbid, and of chocolate colour (from the *Iron*). Colon much contracted. Spleen rather soft. Urine in bladder.

(13.) A boy, æt. 2, and a girl, æt. 4, took each a teaspoonful of *Bat-powder* (a mixture of *Arsenic* and flour) in the evening. The boy awoke an hour afterwards with vomiting, which recurred at intervals throughout; he was restless and cold, countenance sunken, dark areolæ round eyes, sleepy shortly before death. Did not complain of pain except when questioned, and then referred it to his throat, which the doctor who first saw him stated to have been inflamed. He died in nine hours. *Rigor mortis* was well marked thirty hours and a half after death.

The girl was aroused by the noise which the boy's illness caused, two hours after she had taken the poison. She took an emetic, followed by albuminous draughts. No purging, and inclined to sleep if permitted. After thirteen hours she was cheerful, skin warm, pulse 160, and very weak; tongue coated white, with scattered red papillæ resembling the tongue of scarlatina; some thirst and occasional green vomiting; urine scanty and depositing lithate of ammonia. In twenty-four hours face flushed; eyes rather injected; pulse very quick. In thirty-six hours better; pulse 124 and stronger; urine still scanty. In two days and a half, restless night; frequent vomiting of green insoluble bile since last visit; pulse 132, but afterwards rose to 160; restless; urine less scanty. In four days and a half, copious vomiting yesterday of green viscid substances; bowels

freed by injection with much relief; less thirst; pulse 96, soft; still vomiting on drinking; tongue loaded. In six days and a half, convalescent.

(14.) J. G—, æt. 38, took *Arsenious acid* in tea, Feb. 16th, 1841. Towards the end of the draught found it nauseous. In about five minutes a peculiar tingling sensation commenced in left arm, lasting about forty-five minutes; this was followed by nausea, vomiting, and headache, which continued till next day, when much thirst was added, with hoarseness, lachrymation, and swelling of eyelids. On 4th day, having almost completely recovered, he took two teaspoonfuls of *Arsenious acid* in coffee and milk. In about thirty minutes he had headache and nausea, followed by vomiting of green bilious matter and ropy mucus, continuing for thirty hours. There were also cramps, some collapse, constriction of throat, hoarseness, and burning in tract of œsophagus, which last symptom continued till 6th day; 2nd day, a line of excoriation on integument at external angle of each eye, and desquamation of cuticle of eyelids, with redness of latter; eruptions of pustules about angles of mouth; redness of fauces with aphthous ulceration; 3rd day, cough with yellowish-white expectoration, and bronchitic râles in chest; difficult micturition, but without pain; tingling sensation in axillæ (for eight days); heat of skin; quick pulse; 5th day, numbness of thighs and calves; 11th day, anæsthesia of fingers, and partial paralysis of flexors of forearm; a similar condition shortly afterwards attended the lower extremities, and was accompanied in both by pain persisting for a few days. In five weeks from the commencement of the illness, skin of entire body had desquamated; most remarkably so on hands. In six weeks the paralysis of flexors of both extremities was unabated, and accompanied with soreness on pressure. In two months and a half he was still unable to stand without support. In eight months the paralysis of sensation and motion, the soreness on pressure, and the impediment on urinating still continued, though less. In twenty-three months nearly well. Some time afterwards he quite recovered.

(15.) Miss D—, æt. 18, took *Arsenious acid*. She had vomiting, constriction of throat, stupor, and when near death dark areolæ round eyes. Died in thirty-two hours.

(16.) Five persons took *Arsenic* in food. Two died in from

eight to ten hours. Symptoms: burning in throat, vomiting, and pain in abdomen; in two cases the symptoms commenced half an hour after the food; in one (a child) stomach and intestines were found inflamed.

(17.) M. B—, æt. 30, took in gruel and porter nearly a teaspoonful of *Arsenic*. In about an hour she had some vomiting, which soon became green and copious, and produced great pain in throat and chest; at midnight she was seized with violent pain in abdomen, principally in hypogastrium; burning sensation in stomach and hoarseness followed, and sense of constriction in œsophagus; itching about eyelashes; dim sight; cold clammy sweat; sleeplessness; sooty taste in mouth; vertigo; ringing in ears; tingling in limbs; paralysis of legs; sensation as if cold water were poured down back. For several succeeding nights she had fits resembling epilepsy, except in the absence of frothing at mouth. On 4th day there was epigastric pain on pressure; subsultus tendinum; great thirst; pain in stomach when she drank; vomiting had ceased, and also the noise in ears and tingling in limbs. Not seen again.

(18.) A man and woman took *Arsenic* in punch. Both complained of its nauseous taste. The man died in from eight to nine hours afterwards, with vomiting (in part bloody) and pain in head and belly. The woman (who survived) had burning in fauces, vomiting, violent pain in abdomen, cramps, and incessant thirst. She was six weeks in recovering, previous to which there was general desquamation of the cuticle. In the deceased the contents of stomach were three pints of a dark bloody fluid. A duck, to which two tablespoonfuls of the contents were given, was seized on the same evening with paralysis of legs and an effort resembling vomiting. It lived three days, during which time it cast most of its feathers.

(19.) S. M— took *White Arsenic* (nearly an ounce was found in the stomach) and died in about seven hours. Symptoms: vomiting of green matter for the first two hours and a half; subsequently, bilious purging; pulse weak and slow, occasional sleepiness.

Post mortem in sixty-three hours. Body quite free from putrefaction; a very peculiar odour on cutting into the abdominal muscles and cavity. Much scarlet capilliform injection beneath the peritoneal coat of stomach, same in omentum;

mucous membrane of the body and splenic end a light reddish-brown, with some darker patches; beautiful vivid red striated vascularity of pyloric fourth; in splenic end were numerous erosions of mucous coat, chiefly rounded, with some streaks of various sizes, edges undefined and destitute of redness or induration, bottom formed by submucous coat; mucous coat of splenic end softened (by imbibition of fluid contents), that of pyloric not; little adherent mucus, but many patches of *Arsenic* mixed with it were scattered over the surface; a good deal of ramiform injection of submucous coat, chiefly of splenic end. Contents of stomach: two pints, faintly acid, of a dilute brown colour, including much viscid mucus, exhaling a sour and very peculiar odour, and depositing curdy-looking masses on standing. Lining membrane of duodenum reddish brown; a few small abrasions. Cavities of heart engorged with blood.

(20.) Four persons took *Arsenic* in food, which was said to have a peculiar bitterish and disagreeable taste. Symptoms were vomiting and purging, and pain in urination. When seen by the physician the pulse was thready, 120 to 180, and in two somewhat intermittent; faces pale, contracted and anxious, and extremities cold; in two there were cramps, violent burning in epigastrium and throat, with constriction in the latter, and bloody urine.

(21.) Five persons took *Arsenic* in soup. In about half an hour one woman had burning of throat and pain in stomach and bowels, followed by severe pain in head and across eyes, the former continuing till next day. Afterwards she had bronchitis, which slowly yielded. A man had, almost immediately after the soup, headache and feeling of distension in eyes; in fifteen minutes, vomiting and burning in throat; subsequently mild conjunctival inflammation and general debility, and finally bronchitis. Another woman in half an hour had nausea, followed in two hours and a half by burning of throat, severe pain in head, and scalding of eyes; afterwards pain in knees and loins. A girl vomited *immediately* and recovered.

220. *Medical Adviser, &c.* By Dr. Alexander Burnett, 1825. New series, vol. i, p. 601.

Buchanan's case. See below.

221. *Dublin Hospital Gazette*, 1854, vol. i, p. 157.

Vogel's report, abridged from *Archives des Vein*.

A man inhaled *Arseniuretted Hydrogen*; it caused blackish urine, depending upon the presence of altered blood-globules. From experiments on dogs he says that this condition is always caused by inhaling the gas; the urine always containing albumen at the same time, but the blood-globules are seldom recognisable.

222. *Medical Commentaries*, 1789, vol. iii, pp. 411-12, and 1787, vol. i, p. 118.

Effects of *Potassa Arseniata* in a case of epilepsy, communicated to Dr. Duncan. The usual dose was $\frac{1}{10}$ th to $\frac{1}{20}$ th of a grain. A larger quantity caused pains of the breast, gripings, and purgings, as well as an affection of the head. The smaller doses caused only a slight uneasiness in stomach. Extracts from Dr. Thomas Fowler's *Medical Reports of the Effects of Arsenic*. See original below.

223. *Edinburgh Journal of Medical Science*, 1826, vol. ii, p. 490.

Orfila's experiments referred to. See original in *Journal de Chimie Medicale*, April, 1826.

224. *Edinburgh Journal of Medical Science*, 1827, vol. iii, p. 238.

By W. H. Forrest.

A woman, aged about 80, took half an ounce of *Oxide of Arsenic* at 7 p.m., July 22nd. She was soon afterwards seized with excruciating pain in region of stomach, and bloody vomiting. About midnight radial pulse was nearly gone; extremities cold, and the burning pain in stomach and bloody vomiting excessively severe. Died at 8 a.m. in a cold exhausted state.

Post mortem after twelve hours. Slight ecchymosis on palmar aspect of left forearm. Abdomen full, but not tumefied. Internal surface of stomach very much thickened and inflamed; it presented a very red mottled gelatinous appearance, but on being scraped with a knife was found firm and unyielding. Blood quite fluid. Contents of stomach seemed to be a coagulated animal substance floating in a bloody fluid. When filtered, the

gastric liquor presented a dark bloody appearance, not unlike venous blood largely diluted.

225. *Medical Times*, 1840, vol. ii, p. 141.

Extract from *Echo du Monde Savant*.

A manufacturer prepared enormous quantities of *Arsenite of Copper*. Their neighbour, a man, his wife, and three children, who drank water impregnated with it, were all taken ill with pains in head, nausea, painful digestion, almost continual colic, purging, swelling and numbness of legs, universal lassitude, and extreme depression of spirits.

226. *Medical Times*, 1840, vol. iii, p. 57.

By M. Ansroul, from *Journal de Chimie Medicale*.

A young man took some *Arsenic*. In half an hour his pain was intense, with vomiting of sanguinolent matters. Horrible convulsions with grinding of the teeth soon came on; eyes turgid, pupils dilated, pulse small, skin covered with cold and clammy sweat, limbs extremely rigid, and at intervals he vomited a brownish matter. He took *Hydrated Peroxide of Iron*, and the nausea, pains in stomach, and convulsions, subsided. He was bled and conveyed home; the ride caused a return of pain and vomiting. The skin was now hot; mucous membrane of mouth white, and abdominal pain returned. Recovered in ten days.

227. *Medical Times*, 1842, vol. vii, p. 24.

Extract from Orfila's lectures.

The first and most ordinary symptoms of *Arsenical* poisoning are nausea, frequent and abundant vomiting, pain in epigastrium, and occasional stools, particularly when the vomiting is not abundant. Cramps and convulsive movements, with fever and intense heat of skin, soon arrive; and if a large dose has been taken, the skin may be covered with pustular eruptions, attended with intense thirst; sometimes the patient becomes cold and insensible, the face bluish and much swollen; the heart and pulse beat in the most irregular manner. Sometimes the convulsions cease and are replaced by syncope or a fatal calm; the body becomes covered with a cold sweat, the pulse gradually sinks, and finally he dies of prostration. Sometimes the convulsions become more and more horrible. In the case of

Soufflard the body became a blue colour, as in cholera. The quantity of urine is not always considerable, generally he voids only a small portion. In many cases the urine is red and tinged with blood, and the secretion is painful. At other times it is abundantly secreted, and may be voided without pain. Generally the mucous membrane of stomach is found inflamed as far as œsophagus; several of the folds of the stomach have a brown appearance, the other parts of the digestive tube being more or less inflamed. When the poison has been given in powder, ecchymoses and even eschars have been observed. In the stomach of Therese Rigal there were found about fifty eschars of the size of a pin's head. The heart will occasionally have red stains of the nature of ecchymosis.

228. *Medical Times*, afterwards called *Medical Times and Gazette*, 1843, vol. viii, p. 127; 1846, vol. xiv, p. 423; 1846, vol. xiii, p. 94; 1847, vol. xv, p. 42; and *New Series*, 1858, vol. xvi, pp. 64, 76; 1858, vol. xvii, p. 21; 1859, vol. xviii, p. 5; 1860, vol. i, p. 168; 1861, vol. i, p. 118; 1861, vol. ii, p. 560; 1862, vol. i, pp. 446, 471; 1875, vol. ii, p. 514.

Cases by Erichsen, Houghton, Hind, Halley, Adams, Orton, Paterson, Gibbs, Taylor, Kesteven, Schmidt, Sturzwege, Paul and Fagge quoted; see above and below.

229. *Medical Times*, 1843, vol. viii, p. 169.

Dr. Angouard publishes a case where fifteen scruples of *Arsenic* had been taken half an hour before he was sent for. The symptoms were, violent burning at epigastrium, increased by the slightest touch; ineffectual attempts at vomiting; intense thirst; contraction of upper and lower limbs, their extremities cold; pulse slow; respiration slightly quickened. *Tartar Emetic* caused free vomiting of blackish mucous matter. The secretion of urine did not take place until seven hours after the poison was taken, when it became very abundant (the patient had taken *Nitre*), and continued so for some time.

230. *Lancet*, 1853, vol. i, p. 397.

Reference to poisoning at Stettin by the emanations from *Arsenic* used in stuffing birds. [This case should be investigated.—E. W. B.]

231. *Medical Times*, 1843, vol. ix, p. 15, and 1846, vol. xiii, p. 324.

By M. Raspail.

Ghelen was suddenly seized with vertigo, fainting, and vomiting, and died in eight days from *Arseniuretted Hydrogen*. Raspail inhaled it for three days, and on the third day had vertigo and pains in the stomach, prostration of strength, cerebral congestion, fever, dim sight, indigestion, nausea, and griping. Reference to death of a nurse, Hôtel Dieu, Lyons, from *Arsenic*. The only symptom given here is violent pain in epigastrium.

232. *Medical Times*, 1847, vol. xv, p. 202.

By Dr. de Noronha Feital.

From the *Archivo-Medico Brasileiro* [only *briefly* quoted here. —E. W. B.].

A negress took half an ounce of *White Arsenic*. In twelve hours the alarming symptoms had subsided under treatment, leaving her weak and prostrated, with considerable sensibility of epigastrium, tongue red, &c.

233. *Medical Times*, 1847, vol. xvi, p. 303.

At Kensal Green six persons were killed by *Arsenic*, and three more placed in great danger. All had violent sickness, burning in throat and stomach, and metallic taste in their throats.

234. *Medical Times*, 1847, vol. xvi, p. 508.

By Dr. Hooper.

Mr. —, aged 24, took five minims of *Fowler's solution*, ter die, for shaking palsy, from October to 24th of June following, when he had ophthalmia of left eye, which had been preceded by general lassitude and uneasiness in fauces. The *Arsenic* was stopped. Within twenty-four hours the conjunctiva and palpebræ of same eye became œdematous and of a light livid redness, giving more the idea of congestion than of active inflammation. There was also a very copious flow of tears, and an equally abundant discharge of thin fluid, like the lachrymation, from corresponding nostril. On third day there was erythematous inflammation (redness and swelling) of palpebræ, extending over left side of nose, and rapidly spreading over entire surface of that side of head, but not extending beyond the medial line, the separation being abrupt and

distinct. The external ear was the only seat of pain beyond a feeling of tension and tingling heat. With the foregoing local affection he also had headache, drowsiness, nausea, with an inexpressible feeling of anguish and prostration. At first the pulse was rather slower than natural, subsequently it ranged between 90 and 100. The paralysis now became much worse, the muscular tremors especially so, affecting the lower jaw, neck, back, and both arms; they became so uninterruptedly harassing that he could not maintain the same position more than a few minutes at a time, day or night. Almost driven to despair by the perpetual agitation and dragging of the muscles, he felt the drowsiness consequent to protracted sleeplessness and bodily exertion, and yet he could get scarcely any sleep. He was in a constant struggle between sleep and motion; and even when he did doze for a few moments there was increased irritability of the muscles on waking. The erythema, having run through its different stages, left the skin numb, and liable to become hot, red, and shining, from the least local stimulus or increase of vascular action. On nose and ear especially the heat and tingling were at times most unpleasant. The ophthalmia, which ushered in the erythema, became more acute as the latter subsided, and the œdema of the conjunctiva soon exchanged its pale, flaccid, indolent character for the deep, red, fleshy, irritable surface of organised chemosis, and the cornea threatened to become irreparably disorganised.

Six weeks had now elapsed, but the stools were large and the prostration, involuntary movements, and sleeplessness had continued. He improved under *Ferri carb.*, *Opium*, and *Ol. ricini*, but afterwards the fauces again became the seat of irritation, which rapidly extended to larynx and trachea, causing a most troublesome hawking and cough, with ejection of mucus in variable quantity, bright yellow, translucent, readily soluble in water which it tinged with its colour, adhering to the sides of an empty vessel and there spreading and drying up without losing its colour. Soon afterwards his power to eat failed, and he sank gradually till he died on September 13th.

235. *Medical and Physical Journal*, 1800, vol. iv, p. 292.

By Dr. F. Thackeray.

A child, aged 18 months, took *Arsenic*. It was well at 8 p.m.,

and at 8.30 p.m. it had vomiting and purging, followed by coma of some hours, and died violently convulsed at 8 a.m.

Post mortem in thirty hours. Vessels of intestines in various parts very full, as if minutely injected. External vessels of stomach very much distended with dark and very fluid blood, and a blush pervaded every part of its external coat; it was moderately distended with air, and contained about two ounces of a black viscid fluid with several clusters of mucus or coagulable lymph; its inner surface was very red, and in some parts, especially about pylorus, it had a lividness approaching to mortification.

286. *Medical and Physical Journal*, 1801, vol. v, p. 542.

By Dr. Thomas Garnett.

A man made up some pills of *White Arsenic*, butter, and flour, by rolling them in his hands. He was never well afterwards. His head seemed very much affected, so that he scarcely knew what he said or did, and seemed to labour under a kind of insanity. His tongue was very foul and swollen, and he spat very much. Very costive. His arms and legs were paralysed, with violent pains in muscles and in bowels. He died.

287. *Medical and Physical Journal*, 1809, vol. xxii, p. 427; 1812, vol. xxviii, pp. 63, 115; 1819, vol. xlii, p. 435; 1833, vol. lxi, p. 83; 1831, vol. lxvi, p. 265; 1828, vol. lix, p. 863; 1823, vol. xlix, p. 489.

Cases by Yelloly, Brodie, McLeod, Elliotson, Roget, Christison, Buchanan, and Friso, quoted: see above and below.

288. *Medical and Physical Journal*, 1810, vol. xxiii, p. 884.

By Dr. Thomas Jones.

A young woman took *Arsenic*. She seemed well at 2 p.m., and at 4 p.m. had violent pain at stomach, with frequent vomiting; afterwards was much purged; all the time desired to have repeated draughts of water. Died at 2 a.m.

Post mortem after four days. A few red patches on peritoneal coat of stomach; intestines externally inflamed, but not to a high degree. Stomach contained about half a pint of reddish-brown fluid; interior of stomach and oesophagus showed high inflammation; villous coat of stomach was destroyed, and numerous portions of it which had separated were found in the fluid; other

portions of different sizes, some about the size of a shilling and isolated, others larger, still adhered. The parts attached were of an ash colour; felt hardish, as if corroded by a strong caustic. A few ounces of water in pericardium. Internal surface of intestines, so far as examined, highly inflamed.

239. *Medical and Physical Journal*, 1812, vol. xxviii, p. 345 (misprinted in "Index" 245).

By D. H. Davies.

July 9th, about 8 a.m.—Four children, aged 9, 7, 5, and 3, took *Arsenic* in a mixture supposed to contain cream of tartar, sulphur, and treacle. The first symptom (which came on in an hour or two) was sickness at stomach every three or four minutes, with pain and heat; vomiting continued at intervals, with pain in stomach. About 7.45 p.m. I found the whole four stretched about different parts of the same bed. A girl, aged 5, seemed to be suffering more than the others; she said she felt as if some living animal was constantly gnawing at the stomach, at the same time feeling a sensation of burning heat.

Sulphate of Zinc was given; in this girl it did not act, but in ten minutes after she took it the countenance was much altered, the circumference round eyes looked darker than usual, and the mouth was observed to be in the same state. In about half an hour from the time of taking it she died, apparently under the influence of convulsions, just twelve hours after taking the poison. In the other three the emetic acted. The vomit had apparently the consistence and appearance of pus mixed with adventitious matter. The youngest child had been excessively sick soon after taking the poison; but now inflammation was going on in both the others in a very rapid degree. The pulse was 110, skin hot, mouth clammy and parched, and a good deal of tenderness about the scrobiculus cordis and surface of bowels. *Calomel*, *Epsom salts*, and oily clysters were now given.

10th, morning.—The youngest appeared well. In both the others every symptom of inflammation had increased; the pulse was very rapid and full. In one case, for intervals of one or two hours, the greatest languor and prostration of strength would prevail, and the pulse for that time would be scarcely perceptible, and in an hour afterwards every symptom of increased strength and animation would return, and the pulse would rise in strength

and fulness above its previous standard. In the other the active stage of inflammation was going on in the regular way ; he was therefore *bled*, and *leeches* and a *blister* applied.

In the afternoon the eldest, who had been bled, was somewhat better ; the youngest worse, and died during the day. The surviving one now took a saline, rather alkaline aperient, with frequent emollient clysters. It recovered. On the fourth day after taking the poison this child had a vesicular eruption about the mouth and circumference of eyes ; it had every appearance of the maturation of smallpox in its early stages. In a day or two it formed a crustaceous appearance, and gradually died away.

Post mortem.—In the child who died first there was little mark of inflammation on external surface of stomach, the duodenal end of larger curvature showing it most ; villous coat very highly inflamed. Colon very much corrugated, particularly about the arch ; duodenum slightly inflamed, and the surface of the whole of small intestines apparently more vascular than usual.

In the second child who died external surface of stomach was slightly inflamed ; it contained two or three ounces of coffee-coloured fluid ; villous coat most highly inflamed. The whole of internal surface of small intestines highly inflamed, particularly the rectum. Internal surface of bladder much whiter than usual. Rather unusual turgescence on external surface of brain, and the plexus choroidalis remarkably vascular.

240. *Medical and Physical Journal*, 1811, vol. xxvi, p. 31, and 1817, vol. xxxviii, p. 240.

Reference made to an inaugural dissertation by Dr. Jaeger, *De Effectibus Arsenici*, &c. ; to Casimir Renault's paper (presented to the Faculty), *Nouvelles expériences sur les contre-poisons de l'Arsenic*, and to *Remarks on Arsenic*, &c., by John Marshall, 8vo, pp. 168, Callow, 1817 [only a brief extract given here ; see originals.—E. W. B.].

241. *Medical and Physical Journal*, 1813, vol. xxix, p. 44.

By William Bucknill.

A woman took an ounce of *Arsenic* in tea at bedtime. In a few minutes a burning sensation in fauces and stomach, very soon followed by violent vomiting, continuing all night ; insatiable

desire for drinking, which induced her to take large and repeated draughts of warm water. About four hours after taking the poison a most excruciating pain in bowels, soon followed by diarrhoea, which excoriated anus. About 8 a.m. was found with the above symptoms, pulse scarcely perceptible, and in a cold clammy sweat. Towards evening the inflammatory action came on, which was treated as gastritis. In two or three weeks she recovered, except in having occasional attacks of cramp in stomach which returned for upwards of twelve months, then gradually left her.

242. *Medical and Physical Journal*, 1815, vol. xxxiv, p. 441.

By W. J. Crowfoot.

Robert S—, aged 6, and five other children, took *Arsenic* in food. Very soon after they were all extremely ill. Those old enough to describe their feelings complained of sickness and pain across the stomach, and general sense of coldness. Robert became worse, was seized with convulsions, and died in about five hours in a strong convulsive fit.

Post-mortem.—A slight appearance of inflammation about the lower orifice of stomach.

243. *Medical and Physical Journal*, 1823, vol. xlix, p. 117.

By J. W. Edwards.

A woman, aged 35, seven months pregnant, dissolved an ounce of *White Arsenic* in half a pint of hot water, stirred it well, and drank about half. In about eight minutes she had excessive sickness, pain, and other alarming symptoms. About 8 a.m., August 31st, I was sent for, and found her much exhausted from violent retching and vomiting. She complained of very great cold in extremities, unquenchable thirst, spasmodic pains in bowels, and especially towards epigastric region; mouth much parched; eyes bloated and face swollen; very restless, with great anxiety and distress of mind; pulse 120. Ordered *Magn. carb.* and *Opium*, mucilaginous drinks, and warmth to extremities. At noon vomiting was less frequent and less violent; skin very hot; intense thirst; burning pain in stomach, and great soreness on pressure; pains of head and sides; great restlessness; pulse 136, strong. Bled her from arm to twenty ounces, and repeated *Magnesia*. 7 p.m. more calm; great soreness of throat and

mouth; vomiting and retching less urgent; pain over region of stomach and towards the right side; pulse 106. Ordered *Castor oil*, twelve leeches to side, and repeated mixture.

September 1st, 8 a.m.—Had slept about three hours in night; vomiting less; burning of stomach and throat materially diminished; bowels had been scantily purged; pulse 104. Repeat *Castor oil* and *Magnesia*.

2nd.—Much soreness of throat and stomach; bowels open; skin moist; has been faint several times during the night; pulse 98 and small. Repeat *Magnesia*.

November 6th.—Has continued to improve. Present symptoms are—Indistinct vision; great weakness in stomach; numbness extending from feet to knees, hands similarly affected and always cold; is so faint that she thinks she never will be quite well again.

244. *Medical and Physical Journal*, 1827, vol. lvii (vol. ii of New Series), p. 247.

By James Scott.

A girl aged 16 took half a teacupful of *Arsenic*, and fifteen pennyworth of *Laudanum*. I found her writhing from great torture in epigastric region; tongue loaded with a thick buffy coat; breathing quick and oppressed; pulse imperceptible; body cool; extremities icy cold; burning heat in mouth and sensation of constriction of fauces, or "choking" as she termed it, amounting almost to suffocation. Insatiable thirst, calling constantly for water. Had vomited severely for two hours, and had had frequent dark and offensive stools. Died six hours after taking the poison.

Post mortem.—Internal surface of stomach had universally a bright vermilion blush, with patches of a brownish red scattered here and there, but chiefly in posterior lateral surface, in pyloric half. These patches were somewhat pulpy, rather loose in texture and adhesion, more glossy than the surrounding parts, and gelatinous in appearance. There were portions of disorganised mucous membrane, and could be detached by being pinched between the finger and thumb, leaving the muscular coat denuded. Near small end of stomach lay two masses of powdered *Arsenic*, enveloped in a sort of reddish jelly.

245. *Medical and Physical Journal*, 1821, vol. xlv, pp. 466, 545.

By J. Hume.

Mrs. —, aged 20, took some *Arsenic* after supper, near midnight. Next day, about 8 a.m., she was in most excruciating agonies, with constant efforts to vomit, or retchings; in early part of morning had vomited once or twice rather copiously. Pulse above 120, rather unequal. Much mental and bodily agitation; seemed fully sensible of her danger, and repented of her deed. Acute and fixed pain in and about gastric region; burning heat in throat and fauces.

The abatement of the retching, burning heat, gastric pain, and the frequent but not effectual stools, was followed by chilliness, with cold extremities, nausea, and slight efforts to vomit; trifling headache; peculiar feeling of smarting and pain at the end of the rectum; inclination to evacuate, but not at all of the nature of tenesmus; and some oppression of chest with difficult breathing. She recovered in ten days, having taken *Magnesia* and *Opium*.

Roget's paper referred to, see below; also Marshall's *Remarks on Arsenic*, 1817.

246. *London Medical Gazette*, 1834, vol. xiii, p. 176; 1829-30, vol. v, p. 823; 1836-7, vol. xix, p. 238; 1833, vol. xi, p. 771; *New Series*, 1843-4, vol. i, p. 879; 1845, p. 1306; 1841-2, vol. i, p. 114.

Cases by Ward, Christison, Skillman, Perrine, Shipman, Beck, Fry, and from *Med.-Chir. Review*, quoted; see above and below.

247. *Dublin Medical Press, New Series*, vol. ii, pp. 405, 414.

Reference made to Lorinser in *Union Medicale*, and De Pietra-Santa in *Annales d'Hygiene* for October, 1858, and to cases in *British Medical Journal*.

248. *Dublin Medical Press, New Series*, vol. iv, p. 419.

By Mr. J. T. Paul.

A girl, aged 19, died from making flowers in which *Emerald green* was used. When taken ill she complained of a pain in the side and intense thirst. She vomited a greenish substance. She

had been ill several times before, and complained of pains in stomach and sickness for one and a half years. She was in the greatest pain till she became insensible and died.

Post-mortem.—Body and eyes greenish-yellow. Nails very green; countenance particularly anxious. Stomach much inflamed with bunches of gangrenous ulceration. Inflammation of mucous membrane of bronchial tubes.

Mr. Paul had had other cases of a similar character, eruptions on neck and face being the usual appearances. Another girl had died under the same circumstances, and was sent to the hospital, where she was treated for fever.

249. *Medical Times*, 1845, vol. xii, p. 123.

Translation from Frantz. Apoiger in Buchner's *Repertorium*.

Experiments with *Arsenic* and blood. A dog had three grains of *Arsenious Acid* in milk after fasting eighteen hours, and in fifteen minutes eighteen ounces of blood. Considerable sweat and trembling all over body ensued, then thirst, dejection, and tendency to vomit. At 7 p.m. it seemed well; neither vomiting, stool, or urine occurred during the night.

On the third day it had six grains in broth, after fasting twelve hours, and within ten minutes twelve ounces of blood were given. It drank a great deal of water, and had sweat, exhaustion, and trembling. In the evening it was quite lively.

On fifth day it had nine grains in milk, and in a few minutes nine ounces of blood. The symptoms were the same, and a pterygium of right eye exhibited itself, and disappeared by next day.

On seventh day it had twelve grains in broth, and eight ounces of blood. The sweat was now so great that it appeared as if it had been bathed; great thirst. It howled constantly with a hoarse voice, and evacuated fæces and urine, which it had not done in the former experiment.

On ninth day it had eighteen grains and six ounces of blood. There was great thirst, restlessness, convulsions, and complete prostration. By 11 p.m. the symptoms had almost disappeared; after some days it was almost well, with the exception of hoarseness in barking.

The dog was now killed. The venous blood was gelatinous, the arterial coagulated and not quite red; liver very hard and

fragile; lungs inflated and covered with bluish spots in some places, scarcely containing any blood. Blood in heart gelatinous and black, especially in right ventricle. Stomach thrown into deep folds, much inflamed externally. Duodenum, ileum, and colon, inflamed.

250. *Medical Times*, 1846, vol. iv, p. 228.

Linoli's cases, abridged from *Annali Universali de Medicina*.

A man took *Arsenic* in food. He had scarcely finished when he experienced a general feeling of lassitude and nausea, and after a time such a weakness in legs that he with difficulty got into bed. The symptoms increased. His stomach seemed to jump, and severe pain with vomiting ensued. The matter vomited was fluid, apparently the water he had drank, and it relieved him. The pains soon returned, however, and were very acute over the whole belly. He attempted to rise, but was unable to stand in consequence of vertigo and the weakness he felt in his legs. He drank olive oil, and vomited with relief; he repeated the oil, and again vomited, and after this had stools. These discharges weakened him so much that he felt himself fainting; he ate two eggs, which relieved him. He could not get into bed again, his knees trembled, and his weakness was extreme. In a short time his pains returned; he ate two eggs, and felt relieved. The night passed thus, and in morning he was able to go to bed. Another man and his three children ate some of the food. They had the same symptoms. The weakness in both men was relieved by white wine.

251. *Medical Times*, 1848, vol. xix, p. 56.

Poisoning by *Arsenic* with *Laudanum* [omitted as doubtful, the symptoms being much mixed.—E. W. B.]

252. *Half-Yearly Abstract of Medical Sciences*, 1847, vol. v, pp. 335—7.

Houghton's and Letheby's cases, quoted, see above.

Another case at King's College Hospital, referred to:—A child took some *Fly water*, and after the complete evacuation of stomach with temporary relief, fatal coma ensued.

253. *Half-Yearly Abstract of Medical Sciences*, 1869, vol. xlix,

p. 118; 1859, vol. xxix, p. 16; 1846, vol. iii, p. 329; 1845, vol. ii, p. 413; 1860, vol. xxxi, p. 15; 1865, vol. xlii, p. 137; 1861, vol. xxxiii, p. 14.

Cases by Graham, Fry, Taylor, May, McKerlie, Heisch, Roscoe, Mitchell, and from *Westmoreland Gazette*, quoted; see above and below.

254. *Medical Circular*, 1855, vol. vii, p. 112; 1857, vol. x, p. 87; 1857, vol. xi, p. 63; 1859, vol. xiv, pp. 3, 112; 1860, vol. xvi, p. 407.

Cases by Taylor, Heisch, Rose, Hind, Godfrey, and Wooler, quoted; see above and below.

255. *Medical Circular*, 1859, vol. xiv, p. 254.

Harles experimented on healthy men with $\frac{1}{15}$ th to $\frac{1}{4}$ grain of *Arsenious Acid*. The effects were: increased contractility of intestine and stomach; increased peristaltic action of intestines; similar excitement, but less marked, of muscles of extremities; at the same time slight sense of constriction in throat. Pulse became more full and frequent, but sank again, and only beat with greater force and frequency when the dose was increased. In this way can be produced in healthy persons attacks of remittent fever, though not such rigors as those of true fever, but only flushing heats disappearing and returning, and chiefly felt in præcordial region and forehead. Such accessions terminate sometimes in partial or general sweats, and at other times merely in a moist state of skin. This *Arsenical* fever never acquires any regular type. It is rare for the excitation to be carried to this degree; and there is more usually an increase, more or less considerable, of the heat of the body, which seems to have its source in the stomach and præcordial region, whence it passes to the rest of the body, but is especially felt in forehead and eyebrows. To produce these effects a rather strong dose is required. Among the symptoms is also simple ardor in œsophagus extending to stomach, but seldom painful when the dose is not considerable. The increase of appetite is remarkable, and is almost always observed when the dose is weak. A strong dose produces opposite effects, such as diminution and even complete loss of appetite, nausea and vomiting. The thirst is more excessive in proportion as the quantity of *Arsenic* taken is greater; the stools are more

frequent and less consistent, but this seldom, if ever, becomes changed into true diarrhoea, and more rarely still into dysentery. Urine is more abundant and more frequent. This increased secretion of urine alternates with the cutaneous transpiration, and is the more considerable the drier the skin is. There is also remarkable watchfulness, intellectual excitation, with great muscular activity and aptitude for walking; the breathing becomes more facile, and is accompanied with a certain feeling of comfort.

Arsenic eaters, if they leave off the habit, suffer symptoms similar to those of chronic *Arsenical* poisoning:—anxiety for their persons, indifference about every one around them, derangement of the digestive functions, accompanied especially with anorexia, sense of fulness of stomach, alimy vomiting with ptyalism in the morning, pyrosis, spasmodic constriction of pharynx, griping, constipation, and above all, difficult breathing. For these symptoms the only efficacious treatment is a return to the *Arsenic*. An *Arsenic* eater, æt. 63, had taken large doses from the age of twenty-nine, without experiencing anything beyond some alteration and roughness of voice. Masselot and Trousseau have remarked that in themselves *Arsenic* produced unwonted vigor in the legs, and great aptitude for walking.

Dr. Gouffia himself took, from beginning of November, 1856, to the following June, the *Arsenate of Soda*, a single dose taken at a time, at intervals of two days, beginning with 5 milligrammes, and increasing the dose gradually to 4 centigrammes. During the whole time the appetite was excessive, and the *embonpoint*, very apparent; its discontinuance was quickly followed by considerable emaciation. Five centigrammes of *Arsenious Acid* taken at supper caused nausea and headache the following morning, with slight diarrhoea, all of which disappeared in the course of the day.

256. *Medical Circular*, 1858, vol. xii, p. 85.

Dr. A. Halley's remarks on the effects of *Arsenical* paper on himself, copied from the *Times*. In a few days there were constant headache, dryness of throat and tongue, with internal irritation. After three weeks he became completely prostrated, almost losing the use of the left side. These symptoms always came on from the use of the *Arsenical* room, but from none other.

257. *Medical Circular*, 1858, vol. xiii, p. 86.

By W. Nix.

Mrs. B— took *Arsenic*; she recovered; but was much debilitated and exhausted.

258. *Provincial Medical and Surgical Journal*, 1840, vol. i, p. 155.

By Dr. John Rayner.

Post-mortem appearances in some cases of poisoning by *Arsenic*.

(1.) Mary Ann S—, æt. 4. Anterior edge of each lung of a vermilion hue; posterior edge of both much congested; heart empty and healthy. Convex surface of liver bright red. In intestinal canal, when cut open, there appeared patches of inflammatory redness here and there, more especially in duodenum and upper part of jejunum; none in colon or rectum. Stomach had marks of excessive inflammation on its entire internal surface; at the greater curvature there was an *appearance* of a slough about one and a half inch in length, and half an inch in breadth. This portion of stomach was remarkably thickened. Also the appearance of another slough at pylorus, about the size of a shilling, and several smaller ones near it about half the size of peas. Gullet highly inflamed. These *appearances* of sloughs were removed by macerating in water for a few days when the lymph that was here thrown out, giving this appearance, separated, together with a clot of blood, leaving the stomach entire beneath, and of a deep red colour. Considerable arachnitis.

(2.) Elizabeth S—, æt. 6 months.

Post-mortem after twenty-three days. Posterior surface of heart, particularly left side, highly inflamed. External surface of stomach dark red, especially at left extremity, where it was much softened and tore with the least touch; smaller curvature was of same colour but not softened; on opening it lining membrane was found inflamed throughout, covered with a brown viscid mucus. Upper part of duodenum highly inflamed; lining membrane of jejunum at its upper half inflamed and ulcerated, and in some places so soft as to be easily torn. One of the ulcerations was of the size of a shilling, and had perforated the bowel; another near larger bowel was the size of a fourpenny

piece. At commencement of large bowel, marks of excessive inflammation. That part of liver lying over small curvature of stomach and a portion of its under surface (lobulus spigelii) were inflamed.

(3.) Catherine S—, æt. 2 years 4 months.

Post-mortem after 103 days. Whole interior of stomach had a reddened appearance; its left side thickened and corrugated; its right side much inflamed. Duodenum and jejunum red. Ileo-cæcal valve inflamed; descending colon of a rosy hue. Heart redder than natural.

259. *London Medical Gazette*, 1882, vol. x, p. 115.

By Dr. Robert Venables.

A fowl looked rather dull and "mopy" about 2 p.m. Next morning four fowls were dead and stiff. Where they had roosted was unusually soiled by the excrements.

Post-mortem.—Intestines presented patches of morbid vascularity of greater or less extent; the colour of patches varied much, in some being scarlet or crimson, and in others a deep purple. Intestines in many places stiff, rigid, and hardened in their structure. Crop was full of food, and in some of them perforated. Gizzards looked unnaturally red and vascular throughout their substance, the colour varying from a darkish crimson to purple; there was also a gelatinous bag in gizzard; in some the contents were perfectly fluid, yellow, faintly tinged with green; in others it was a complete gelatinous mass, of the same colour and general appearance as the fluid with the exception of consistence. This existed in each of the four fowls. Lungs dark, grumous looking, and evidently turgid and congested in their parenchyma; while the vascularity of pleural membrane, both costal and pulmonary, presented more of the inflammatory character. Brain was more vascular than usual (doubtful); trachea unnaturally vascular; œsophagus, both externally and internally, presented patches similar in character to those seen in intestines. Pleura pulmonalis was bright red or crimson, and the appearance of genuine inflammation much more strongly marked than in any other part. Anus much excoriated, as in cases of acrid stools. *Arsenic* was detected in the fowls.

260. *London and Edinburgh Monthly Journal of Medical*

Science, 1843, vol. iii, p. 363; 1841, vol. i, p. 907; 1842, vol. ii, pp. 617, 1074.

Cases by Errard, Beck, O'Reilly, and Hilton, quoted; see above and below.

261. *London and Edinburgh Journal of Medical Science*, vol. iv, 1844, p. 149.

Extracts from the trial of Mrs. Gilmour for poisoning her husband, 1844.

Arsenic was found in the body.

Symptoms given by the witnesses were vomiting; face and eyes swelled; watering of eyes from vomiting. Pain in one side. Retching. Swelled about the chest [? stomach, E. W. B.]. Pain in stomach [? abdomen, E. W. B.]. Constant thirst. A severe fit an hour or so before death. Wandered a good deal, sometimes speaking loud, sometimes low. Vomited green and yellow substance like bile. Pain in right side. [The above is from the evidence of non-medical witnesses, E. W. B.]. Dr. McLaws said he had pain in side, fever, and thirst. Dr. McKechnie said the pulse was 110 to 112 the first day; had pain in upper part of abdomen and in the throat. He was in a very low state. He was disinclined to answer questions, but answered correctly. Was not comatose, but sluggish and drowsy.

Post-mortem after eleven days. A blush all over external surface of intestines. At a part where ileum was in contact with colon there was more of redness than elsewhere, and at that place there was an effusion of lymph, which limited the two surfaces by adhesions. On inferior aspect of left side of transverse arch of colon, and on upper surface of that part of ileum next to it, there were bright yellow stains in large spots and streaks along these bowels; these stains and streaks were particularly large and bright also on right half of large curvature of colon, where they are included within the cavity of the Winslow [sic in report, E. W. B.]. Great end of stomach very red, but in some places bright yellow. Upper surface of liver dark, excepting at edge of right lobe, where it had the usual appearance; its under surface was yellower than usual. Internal surface of œsophagus very red. In stomach were extensive bright yellow patches and streaks on anterior side of great arch, and stretching towards pylorus. Posterior or dorsal side very

red, and its substance thickened ; indeed, the whole of its internal surface was either red or yellow, the latter colour resembling orpiment. Duodenum red, internally and externally. Valvular folds of inner coats of upper half of jejunum enlarged and reddened. The rest of the jejunum and ileum red, both externally and internally, in many places ; and throughout the whole alimentary canal the redness, internally and externally, corresponded in locality. Small intestines contained a red, jelly-like, mucous matter in all those places where their internal coat was red. Ascending and transverse part of colon red and thickened. A yellow patch on left side of arch and top of descending colon. Rectum thickened and very red internally. Stomach contained about one ounce and a half of reddish fluid ; intestines contained a similar but thicker fluid.

262. *London Medical Gazette*, 1834, vol. xiv, p. 62.

By Dr. John K. Booth.

Mrs. —, æt. 24, was admitted at 7.30 p.m., having taken half an ounce of *Arsenic* about two hours previously. She had taken an emetic about an hour after the poison, which brought away a large quantity of fluid, with particles of *Arsenic*.

Present symptoms—Pallid face, extremities cold, eyes suffused, pupils somewhat dilated, but sensitive to light ; speaks now and then with effort, but appears insensible. Pulse 90, and very compressible. Refused to swallow mucilaginous drinks, so stomach-pump was used, and strained, filled, and emptied six or seven times with soap and water and a little *Carbonate of Soda*. A mixture of *Castor oil* and *Olive oil* was then injected, but symptoms of collapse had already come on, pulse became very weak, pupils contracted and fixed, surface cold, and she had violent purging. She died at midnight.

Post-mortem in sixteen hours. Vessels of brain gorged with dark blood. Slight subarachnoid serous effusion, but ventricles empty. Brain substance firm ; cerebellum firmer than usual. Lungs congested sufficiently to have completely impeded respiration. Heart not particularly loaded, cavities of right side nearly empty. Oesophagus downwards, to within half an inch of cardiac orifice, inflamed. Whole internal surface of stomach of an intense scarlet colour, and mucous membrane constricted into rugæ, to which some of the *Arsenic*, enveloped in a viscid, tenacious

mucus, adhered in two places. The inflammation of stomach terminated at entrance of œsophagus by a well-defined limit. Numerous dark spots and small dark streaks were universally sprinkled over internal surface, but particularly at cardiac extremity of stomach. Redness and increased vascularity of jejunum, duodenum, and ileum. Colon exceedingly constricted, barely admitting passage of finger. Solitary glands more prominent than usual, and pale. Veins on inner surface of cæcum and commencement of colon had a very beautiful arborescent appearance from congestion; and this was still more conspicuous on mucous membrane of bladder. Kidneys darker than usual. Vessels of liver turgid, and its size rather large.

263. *London Medical Gazette*, vol. xiv, p. 712.

By Joseph Houlton.

In two cases of poisoning by *Arsenic* colon was contracted throughout its whole extent. In one of the cases (a child two years old) the only morbid appearances in stomach were two small, bright red spots on mucous membrane near fundus. In the other case, where a large quantity, perhaps an ounce, was taken, there were about four ounces of viscid, bloody mucus in stomach with nearly one drachm of *White Arsenic*; that part of mucous membrane in contact with the fluid being deep red, the the rest of its natural hue, the line of demarcation being most strikingly apparent.

264. *London Medical Gazette*, 1835, vol. xv, p. 220.

By Mr. R. H. Brett.

(1.) Two grains and a half of *Arsenious Acid* were given to a rabbit of moderate size at 9.20 a.m. At 10.30 p.m. it seemed well; but was found dead next day at 8 a.m. The whole venous system, and external jugular veins in particular, gorged with semi-coagulated blood. Stomach distended with food, and almost the whole of internal surface, particularly about cardiac end, of a vivid red colour, with an abundant secretion of mucus of a somewhat firm consistence. The mucous membrane in several places exhibited a dotted appearance, apparently from extravasation of blood into sub-mucous cellular tissue, and readily peeled off.

(2.) Rather less than two grains were given to a small rabbit,

and three or four minutes afterwards eight or ten grains of the *Hydrated Oxide of Iron*. It died in less than three hours, remaining throughout in a torpid state, but not apparently suffering from pain. Heart and venous system were found gorged with fluid blood. Considerable quantity of mucus covering lining membrane of stomach.

(3.) Five grains of *Arsenite of Iron* were given to a full-grown rabbit at 10 a.m. At 6 p.m. it became inactive and refused food. It continued in this state for two hours, when it made violent muscular exertions, and was evidently gasping for breath, while it occasionally uttered a loud tracheal rattle. It died in a very short time. Larynx and trachea, as far as bifurcation of latter, much inflamed; lining membrane covered with a considerable quantity of mucus. Right lung morbidly red and less crepitant than natural; venous system gorged with coagulated blood; mucous membrane covered with a layer of mucus, so solid as to adhere and peel off in part with contents of stomach. Stomach much inflamed, especially about cardiac end, at which part some extravasation of blood had taken place beneath mucous membrane.

(4.) Six grains of *Arsenite of Iron*, mixed with about the same quantity of free *Oxide*, were given to a full-grown rabbit late in evening. It was found dead next morning. Venous system was found gorged with coagulated blood; stomach lined with mucus, as in last experiment. Cardiac end of stomach much inflamed; also patches of extravasated blood.

265. *London Medical Gazette*, vol. xv, p. 447.

Orfila's account of Lesueur's experiments, read before the the *Académie de Médecine*, referred to (see original).

266. *London Medical Gazette*, vol. xv, p. 828.

By Mr. P. H. Holland.

A woman, between 30 and 40, was taken ill at midnight; on the arrival of the doctor was found dead. Symptoms were vague. At 6.30 p.m. she was slightly sick and faint, and continued so till midnight. Did not speak except to give directions as to where she wished to be taken. On her arrival at the house she was unable to walk unassisted. She sat down on a chair, and the people of the house thought she was intoxicated.

Very shortly afterwards she was seriously ill, became very faint, looked cold, and the skin became blue; her eyes fixed. She slipped off her chair, but did not fall to the ground. A little after 1 a.m. she was found dead, in a semi-reclined posture, her head resting on the table.

Post-mortem after thirty-one hours. Body remained very sensibly warm fifteen hours after death. Countenance placid but sunken, and very slightly contracted. Abdomen sunken; slight lividity where the dress had pressed; and decided blueness of the fingers and nails. Intestines externally and peritoneum more vascular than usual. Colon contracted to size of finger through its whole length, except near cæcum. In stomach the vessels were injected externally. Mucous surface of pyloric half intense purple-red, darker than raw meat, and softened. Stomach contained about two or three ounces of bloody mucus, with numerous grey, yellowish, gritty particles. Mucous surface of duodenum soft, mottled, and corrugated. Throughout the first third of small intestines were patches of inflammation of about an inch in diameter, but in only a few instances were there any of the grey particles on the spot, though in all some were found close by. Ileum was free from these patches, except about three feet from cæcum, where the whole mucous surface for some inches was congested, softened, and nearly destroyed. Bladder empty. Lungs gorged with purple blood, most so behind. Veins and sinuses of dura mater distended with blood; arachnoidal vessels injected. On cutting through medullary substance spots of blood appeared. *Arsenic* was found in the body, ten or twelve grains being in the stomach alone.

267. *Provincial Medical and Surgical Journal*, 1842, vol. iii, p. 21.

From Dr. Houston's Catalogue.

Wednesday, at 9 o'clock, a man swallowed $\frac{1}{2}$ ounce of *Laudanum* and three drachms of solution of *Arsenic*. Soon had strong tendency to sleep, flushing of the face, and gastric pain, increased on pressure; pulse variable and weak; total loss of voice.

Thursday morning, nausea, constant inclination to vomit; vomiting of mucous matter streaked with blood, pain in stomach with heat and burning sensation, thirst, colic pains, constriction

about œsophagus, spasms of gastrocnemii; severe diarrhœa, mucous and bloody discharges, tenesmus, and finally true dysentery; urine scanty, and the act of urination painful; abdomen retracted; little or no sleep; pulse 88. Was treated for gastro-enteritis.

Friday morning, pale; had slept but little, and was roused by horrid dreams; debility and excessive irritability of stomach; evidence of great inflammation of rectum, constant disposition to go to stool, great pain and tenesmus, protrusion of mucous membrane of rectum, and bloody discharges.

Saturday, the same symptoms; hiccough, vomiting, and constant tenesmus; pulse weaker, but mind collected.

Monday, in addition to former symptoms, fits of dyspnœa and syncope; black circle round eyes; pulse 123; crepitus of emphysema felt in right and left side of neck, and beneath both clavicles. His pains were most excruciating, and the calls to stool urgent and incessant; suffered severely from hiccough and prolapsus of rectum. Felt dying from pain and exhaustion; his flesh had wasted rapidly; pulse 140 and weak; rigor and chilliness; abdomen strongly retracted. Died.

268. *Provincial Medical and Surgical Journal*, 1842, vol. iii, p. 269.

By Jonathan Toogood.

W. R—, æt. 17, swallowed two drachms of *Arsenic* at 9 p.m., on June 2nd. In about fifteen minutes six grains of *Tartar emetic* were given, and quickly repeated. Vomiting was soon excited, and kept up by draughts of warm water. Nothing was retained on stomach during night, and he complained of constant and severe pains in stomach and bowels. He passed the night without rest, and next morning complained still of great pain in stomach and bowels, was very hot, with frequent pulse and flushed countenance. He was copiously bled, and bowels were relieved by injections, but nothing could be retained on stomach until the evening after the application of a *Blister*. *Effervescent mixtures* with *Opium* were then kept with difficulty, but not till the 4th was his recovery certain.

269. *Provincial Medical and Surgical Journal*, 1842, vol. iii, p. 489.

By Dr. Richard Chambers.

A boy, *æt.* 4, took five grains of *White Arsenic* on bread and butter in the morning of March 12th. In ten minutes, took *Oxide of Iron* with sugar, *Theriaca*, and water. No symptoms till about 10 a.m., when he had slight griping pains in bowels, and was rather thirsty.

March 13th, 9 a.m.—Felt rather languid.

15th.—Well.

270. *Provincial Medical and Surgical Journal*, 1842, vol. iii, p. 505.

By Mr. Henry Ewen.

(1.) Thomas J—, *æt.* 46, was suddenly taken ill October 8th, about an hour after dinner, with a sense of oppression at chest, faintness, pain in stomach followed by vomiting. When I saw him he was in bed, but felt much easier and relieved by the vomiting; there was, however, a remarkable degree of nervous depression about him, and an unusually slow pulse of 48. Next morning was so much better that he required no more visiting.

On November 8th he was taken in the same way, and two lodgers, Harvey B— and George W—, were taken very ill.

On arriving at the house between 1 a.m. and 2 a.m. November 9th, found J— dead. Besides incessant vomiting and agonising pain in stomach and bowels, shortly before death he was much purged and passed some blood by stool, and was somewhat convulsed, falling out of bed and lying on the floor. The two lodgers were taken between 8 and 9 p.m. with sickness, followed by copious spontaneous vomiting, griping pains in stomach and bowels, headache, high febrile excitement, and full bounding pulse; recovered in a fortnight.

A girl, *æt.* 17, said she had eaten some of the pudding which deceased ate before his first attack, and that it made her sick and ill, and affected her head.

Post mortem on J—, November 10th.—Fingers all permanently flexed, and hands somewhat livid. Blood in great vessels fluid. Stomach contained about a pint of bloody fluid; mucous membrane generally was intensely red, and about greater and lesser curvature appeared mottled from extravasation of blood beneath it; mucous membrane of duodenum slightly injected. *Arsenic*

was detected in body, and also in the pot liquor in which the food had been boiled.

271. *Provincial Medical and Surgical Journal*, 1844, vol. vii, p. 127.

By Mr. R. Jones.

Miss B— took for chronic psoriasis the *Liquor Arsenicalis*. It relieved for a time, but the disease returned in an aggravated form. She then resumed the remedy in five-drop doses, gradually increasing to fifteen drops, three times a day. She took it this second time for a month with no benefit to the disease, but with the following result:—For last six weeks subject to an obstinate diarrhœa, and has now the following symptoms:—Frequent griping pains in bowels, with almost constant desire for stool; considerable tenderness over whole abdomen, which is distended; constant pain and nausea after food, and frequent vomiting of all ingesta; skin cool and dry; intense thirst; tongue clean and red, like raw beef; pulse 100 small and feeble; sense of constriction of throat and copious flow of saliva; some gastric cough, and frequent raking of throat and fauces, of a muco-purulent secretion mixed with specks of blood. Much pain and tenderness down spine, and frequent muscular tremors; crampy feeling of lower extremities, with partial loss of motion and sensation; they are much swollen, livid in places, and showing a tendency to slough; great emaciation; unable to sleep, owing in some measure to frequent stools, which are white, watery, and frothy; urine scanty, high coloured, and passed with an effort; menses absent. After her worst symptoms ceased there was still great prostration, and feeling of numbness in lower extremities.

272. *Lancet*, 1864, vol. i, p. 408.

By Dr. W. Colles.

An ointment of *Arsenious Acid* and cerate applied to skin of a leprous patient produced a crop of pustules very similar to, but smaller than, those produced by *Tartar Emetic* ointment, and the part became slightly softened. Twice or thrice during the treatment he complained of a burning pain in stomach. In another case the ointment caused slight inflammation of conjunctivæ and pain in stomach.

273. *Lancet*, 1872, vol. ii, p. 495.

Abridgment of Ritter's paper in a late number of *Revue des Cours Scientifiques*.

The compounds of *Arsenic* diminish urea and the total quantity of nitrogen; there is an increase of uric acid, but the urine is alkaline. Larger doses cause disintegration of the globules and the formation of hæmoglobin crystals. The urine then contains albumen, colouring matter, bile, &c. If less doses are given an increase of fat and of cholesterine is found in blood and throughout system.

274. *Boston Medical and Surgical Journal*, 1838, vol. xviii, p. 78.

By Dr. B. L. Cotting.

A man, æt. 22, took two ounces of *Arsenic* in water at 9.15 a.m. At 11.30 a.m. I found him sitting on a bed upon the floor, taking no notice of things about him, sullen, and unwilling to ask questions. A few moments before had had urgent vomiting. Eyes a little suffused, with slight lividity of inner portion of under lids. Countenance unmoved and sullen; skin moist; pulse slightly accelerated, small, and feeble. Refused to take anything, saying that he was determined to die. Soon vomited several times freely, and in mean time had a copious natural stool, at first formed, and afterwards liquid. While at stool he vomited about two ounces of porridge-like matter tinged yellow with bile. He was now compelled to take some eggs and a drachm of *Sulphuret of Potass* in a pint of water. Most of this was soon vomited.

3 p.m.—Vomiting frequent since last visit, in quantity about a pint, nearly a quarter of which was fæcal matter. Has had two liquid stools. Hands cold and fingers somewhat shrivelled. Pulse 112, exceedingly small and compressible. Abdomen lank and flaccid; no tenderness admitted. Occasional grunting. Feels "rather cool." Pupil rather dilated. Occasional hiccup.

8 p.m.—Somewhat thirsty; desires cold water. Skin dry. Hands cold and shrivelled. Pulse 120 (was 140 in afternoon), very languid, compressible, and "flabby." Tongue somewhat furred, whitish; some dryness of throat and fauces. Some tenderness in epigastrium. Says he has no pain, but feels badly and cannot describe his sensations. Hiccup frequent. Apply

sinapiens to epigastrium and feet, and take every hour *Brandy*, *Laudanum*, and water.

11 p.m.—Much worse. Some jactitation. Sensations very distressing, in paroxysms. Hands, feet, pulse, and skin as before. Throat very dry and burning. Constant hiccup. Nausea occasionally distressing. Calls continually for cold water. Abdomen rather fuller than in afternoon, but by no means distended; more tenderness on pressure than before, chiefly in epigastrium. On examination no organ could be distinguished, and stomach could not be defined. Died between 3 and 4 a.m. Is reported to have had many "distressed turns," with faintness and pain, in one of which he died. Towards the last jactitation increased, and his calls for cold water to allay the burning were frequent and distressing.

Post-mortem in twelve hours. Extremities extremely rigid. Much cadaveric lividity, but nowhere deep. Yellow fluid runs abundantly from nostrils on moving body. Abdomen full. Lungs congested, but not remarkably so for one dying in full health. Heart firmly contracted. A few small ecchymosed spots beneath serous surface about base of left ventricle. Upon inner surface of left ventricle where it forms the septum is a red stain 1 to 1½ inches in extent, not well defined, nor very deep, and scarcely, if at all, extending below surface. It cannot be wiped off, and yet it is quite different from an ecchymosis. The columnæ carneæ of left ventricle are more properly echymosed, though not to any very great extent, nor very deep. Right auricle distended with coagula, and some also in left; no fibrin seen. Stomach immensely distended; besides some gas, containing about 1½ pints of a substance like thick curdled milk and water, coloured yellow with bile; mucous membrane discoloured only to a small extent, in large curvature, about commencement of pyloric portion; seeming to consist of an effusion of blood into the substance of membrane—very dark patches, mostly long and narrow. Several of these patches were two or three inches in length, and half inch wide. Some were irregular, and the membrane in these parts thick and quite firm. At two different places something like thick curdled milk adhered to membrane, to the extent of quarter to half inch square, very readily detached, and beneath one of them the membrane seemed superficially ulcerated. Small intestines moderately distended, and

filled with a large quantity of light-coloured secretions of the mucous membrane. Membrane generally red, especially about Peyer's glands. Three or four masses of dark coagulated blood on free surface of mesentery, about two or three inches in diameter. Mesenteric glands rather red. Large intestines contracted throughout to about size of finger; regularly sacculated, and mucous membrane proportionally corrugated. Bladder firmly contracted.

275. *Boston Medical and Surgical Journal*, 1840, vol. xxii, pp. 178, 869, 117.

Extract from *Journal de Chimie*.

MM. S— were seized with vomiting after drinking wine containing *Arsenic*. They recovered after the *Hydrated Peroxide of Iron*.

Orfila's experiments in *Archives Générales de Médecine*, and case of Louis Mercier from *Journal des Débats*, December 2nd, 1839, mentioned (see originals).

276. *Boston Medical and Surgical Journal*, 1841, vol. xxiii, p. 345.

By Dr. D. Humphrey Storer.

August 9th, between midnight and 1 a.m., I saw the late Mr. K—. He was lying in bed, complaining of an indescribable sensation at epigastrium, and great distress in lower part of abdomen; pulse very feeble; surface of body cold and damp; face ghastly and slightly livid; left forearm and hand livid. He had vomited, just before I saw him, a yellowish-green fluid, and a similar fluid had passed his bowels. He had been attacked with vomiting about fourteen hours previously, and had been constantly growing sicker since that time. Ordered *Sinapisms* to epigastrium and feet; *Laudanum* and *Brandy*. Between 5 and 6 a.m. I found him worse; his sufferings greatly aggravated; more restless; great thirst, was constantly calling for drink and as constantly vomiting; continual desire for stool, the stools being perfectly liquid and yellowish. Slight twitchings of muscles of interior of thighs were perceptible to the eye. Repeat *Opium* and *Calomel*. At 10 a.m. he was rapidly sinking. The vomiting had ceased for about an hour, but he was much more feeble; great dyspnoea; so much distressed that he could not lie in bed;

but seated on a large chamber vessel, the stools were passing from him in a constant stream. When removed from the vessel, he was seated on a chair with his head thrown back, and his feet resting upon edge of bedstead. Circulation very languid, pulse at wrist hardly perceptible; tongue cold to touch; almost insensible. The stools which had passed during the previous three hours were entirely liquid, and in quantity about three quarts. I saw him an hour afterwards. He had been dead three quarters of an hour. Muscular contractions so strong as nearly to bring the knees in contact, though separated at some distance, were well marked.

Post mortem in five hours. Externally very rigid; slight contraction of some of the muscles produced by striking them smartly with the fist. Left hand and forearm quite livid. Abdomen moderately full and firm. Peritoneum unusually moist; in cavity of pelvis a small quantity of fluid. Pharynx somewhat red. In large curvature of stomach was an ecchymosis of mucous coat, forming a deep dark-red well-defined patch, equal to about three inches in diameter, the membrane of this part appearing rather thick, but not softened; extended somewhat to submucous cellular tissue, but not to muscular. Two similar spots near cardia and towards large curvature, about two thirds or three fourths of an inch in diameter, but less deep than the first. Mucous membrane elsewhere rather more red than usual, and rather soft in some places. Intestines contained several pints of a faint yellow serous fluid, mixed with a considerable quantity of flaky mucus. Mucous membrane generally rather red, more so in some parts than in others, and particularly in rectum, which was examined to within an inch of its termination. In duodenum were several small but deep spots of ecchymosis. Bladder strongly contracted, containing scarcely a drachm of fluid. A trace of ecchymosis at inner surface of left ventricle of heart. Cavity of pericardium contained a little bloody serum. Ten grains of *Arsenious acid* were found in stomach.

Three Irishmen took *Arsenic* at 11 a.m. In a short time they felt sick, and between 12 and 1 p.m. began to vomit. I saw them next morning at 9 a.m., twenty-two hours after taking the poison. One was beyond relief; he was in bed, writhing about in great agony, complaining of intense burning at stomach, which he described as insupportable; he had been vomiting incessantly

since previous noon; had not had a constant disposition to purge, but had suffered much from tenesmus; abdomen greatly swollen, and pressure upon it caused uneasiness; pulse scarcely perceptible; face ghastly and livid, and covered with a cold moisture; sight dim; conjunctiva of eye a vivid red; entire surface of body cold and wet, and for the most part livid; at moments was delirious; died at 3 p.m.

The second man I found lying quietly in bed, complaining occasionally of considerable distress at stomach. He had been vomiting the greater part of the time since taking the poison. Gave diluent drinks; six *Leeches* to epigastrium which was tender on pressure; *Castor Oil*, as there had been no stool since taking the poison. Next morning, forty-four hours after taking the *Arsenic*, he seemed much better, and had no complaint to make. In the evening I was sent for, and found him in great pain, with constant nausea, insatiable thirst and feeble pulse; eyes bloodshot. Gave *Calomel* and *Opium*, and *Sinapisms* to epigastrium. Next morning much more comfortable. The following morning, the fourth day after taking the poison, I found him at a neighbour's house, to which he had walked, sitting up, dressed, and exhibiting no little confusion of mind in his conversation; he could not be persuaded to go home, or to do anything I wished. He had evidently been drinking spirits. He died at 2 p.m., and the body an hour afterwards was not merely livid, but *perfectly blue*.

The third man had considerable pain in bowels, which continued more or less severe for a week, after the first day's vomiting and purging. Abdomen was much swollen; upon the second day of illness his pantaloons could not be made to meet over umbilicus by a distance of six inches. This enlargement gradually subsided, and in the course of a week or ten days he was well, except a slight debility.

Another man swallowed two drachms of *White Arsenic* in solution at 2 p.m. He immediately lay down; at 8 p.m. came down stairs, and seemed very feeble; said "he was so weak he could hardly stand." Face pale; very thirsty; constantly asking for drink. At 4 p.m. slight cramps of lower extremities; limbs very weak and tottering; eyes red. Died at 7 p.m. Twitchings of muscles observed about twenty minutes after death.

277. *Medical Times and Gazette*, 1864, vol. i, p. 270.

Case of poisoning by sheep-wash, at Kinniside, Ennerdale, Cumberland, on February 24th [Examine local papers.—E. W. B.].

278. *Boston Medical and Surgical Journal*, 1842, vol. xxv, p. 137.

Dr. Clark, of Boston, attended a man who took nearly half an ounce of *Arsenic*, and died in six or eight hours. Stomach was found highly inflamed and ecchymosed, the spots resembling those of the tiger lily.

G. T. Kinney died in 1840, after sixteen or eighteen hours of severe vomiting and purging. Stomach was found highly inflamed, and ecchymosed in patches.

A woman took 180 drops of *Fowler's Solution* in three days. It caused active vomiting and purging, with severe colicky pain, continuing thirty-six hours, when it subsided.

[The above seem to be original; the rest are from *Medico-Chirurgical Review*, for which see above and below.—E. W. B.]

279. *Medico-Chirurgical Review*, 1829, vol. x, p. 170.

By Mr. B. Brodie.

A man with cancer of tongue took five drops of *Liquor Arsenicalis* three times a day, the dose being increased to seven drops at the end of three days.

On Sept. 5th, eight days from commencing the treatment, vomiting was produced, and the medicine omitted.

On 8th he looked very ill; face anxious and distressed; little sickness; a dull aching pain in back of head; pulse quick and bounding; sleep and appetite destroyed; discharge of saliva more profuse than before, and a little tinged with blood. The symptoms increased every day, the saliva flowed in amazing quantities, and he died on the evening of 11th.

Post mortem. Pylorus thicker than usual; mucous membrane of stomach a little inflamed, and its rugæ blackened. The other appearances may have been due to his state of health.

280. *Medico-Chirurgical Review*, 1840, vol. xxxiii, p. 534.

Extract from recent number of *Medicinishe Annalen*. Five persons, three of them children, took *Arsenic* in food. They had excruciating tormina in bowels, painful vomiting, great prostra-

tion, and excessive feebleness of pulse, &c. They recovered after taking *Peroxide of Iron*.

M. Batilliat's report in a recent number of *Journal de Chimie Médicale*, referred to.

281. *Medico-Chirurgical Review*, 1840, vol. xxxii, p. 220.

Extract from *Memoires de l'Académie*.

M. Emery stated that at the Hospital St. Louis, where *Arsenic* is given to the extent of quarter of a grain, it causes quick and strong pulse, sharp pains in region of heart, general feverish heat, and occasionally partial paralysis of extensor muscles of hand.

282. *Boston Medical and Surgical Journal*, 1844, vol. xxix, p. 288 ; 1841, vol. xxiv, p. 362 ; 1858, vol. lviii, p. 88 ; 1862, vol. lxxv, pp. 181, 528 ; 1860, vol. lxii, pp. 484, 270, 507, 415 ; 1851, vol. xlv, p. 513 ; 1834, vol. x, p. 83 ; 1850, vol. xli, p. 428.

Cases from *Gazette des Hôpitaux*, at Hotel Dieu, and by Foster, Halley, Hanley, Julius, Ballenden, Healy, Santa, Heisch, and Basedow, quoted ; see above and below.

283. *Boston Medical and Surgical Journal*, 1848, vol. xxxviii, p. 207.

By Dr. Clark ; reported by the New York Medical and Surgical Society. (From the *Annalist*.)

A young woman took 3 tablespoonfuls of *Arsenic* about 11 p.m. Vomiting was produced by warm water, and the *Hydrated Peroxide of Iron* given. She afterwards had some fever, but gradually became better. Eight days after the *Arsenic* she had severe pains in the upper and lower extremities, which were swollen, but neither red nor hot. Three days after this she lost almost entirely power over her extremities ; she has since continued bedridden. She can move her arms freely, and can close and open her hands, but with no force. Feet are still paralysed, but she can bend the knees.

284. *Medical Times and Gazette*, 1853, New Series, vol. vii, p. 612.

By Dr. T. R. Michell.

A man rubbed an *Arsenical* ointment into axillæ, pubes, and

scrotum, to kill pediculi. In twelve hours he began to feel a stiffness of neck, with slight difficulty in swallowing; the cuticle of scrotum peeled off entirely, leaving the *cutis vera* exposed, inflamed, and bleeding; both testes were enlarged, and could not be touched; great thirst and headache; the most distressing symptom was an indescribable sensation as if the hair was standing on end, and being pulled up by the roots. Stomach was irritable with vomiting, and epigastrium was painful on pressure. He had been purged twice freely, and said he felt as if his bowels were on fire. It was fully a fortnight before all symptoms disappeared, and then there remained a considerable degree of debility.

285. *Boston Medical and Surgical Journal*, 1843, vol. xxviii, p. 214.

By Dr. J. C. Warren.

A woman took more than half an ounce of *Arsenic* about 8 a.m. About 2 p.m. I found her lying on her side in bed; eyes closed; cheeks flushed; heart labouring, with no perceptible pulse at the wrist; feet cold. All forenoon had been vomiting a greenish fluid; once or twice it had some streaks of blood. Had also been purged. Had vomited about every fifteen or twenty minutes. Continued to vomit at intervals of twenty-five or thirty minutes, till about 4 p.m., and was purged four times during that time; stools were liquid and green. Pain in stomach and bowels; and in the vomit I noticed a little florid blood. Died at 5 p.m.

286. *Medical Times and Gazette*, 1873, vol. ii, p. 201.

By Dr. James McCraith.

In a case of *Arsenical* poisoning, stomach was highly inflamed, with ulcerations in many places, chiefly at the cardiac end.

Another who took *Arsenic* had vomiting, the vomit having a very disagreeable smell, and after a few days when mixed with acid it effervesced, and gave off a very resinous smell. He had suppression of urine, and probably the vomit contained urea which had changed to Carbonate of Ammonia by decomposition.

287. *London Medical Gazette*, 1846, vol. i, p. 919; vol. ii, pp. 424, 437; 1847, vol. i, p. 116.

Editorial. A child poisoned by *Arsenic* was certified to have had thrush, and to have died from marasmus.

In another case Dr. James Furlong gave evidence that the patient had suffused eyes, high pulse, and great mental anxiety.

Cases by Apoiger and Letheby quoted (see elsewhere).

288. *Lancet*, 1831-2, vol. ii, p. 617.

By Mr. W. Dobson.

Liquor Arsenicalis in doses of five minims increased to thirty-five *ter die*, in tic douloureux, caused gastric irritation, muscular tremors, and twitchings.

289. *New York Journal of Medicine*, 1858, 3rd series, vol. iv, p. 269.

Dr. Imbert-Gourbeyre says in *Gazette Médicale de Paris*, Jan. 1858, that *Arsenic* causes paralysis, trembling, pains in limbs, contractions, and even convulsions, a paralysis of movement or of sensibility in the upper or the lower limbs, on one side or on both.

290. *New York Journal of Medicine*, 1858, 3rd series, vol. iv p. 430.

By Dr. W. G. Meacham.

A man, æt. 25, took *Arsenic*. I found him prone on floor, his body arched in that curve which unmistakably evinces incipient or confirmed spasmodic contractions of the muscular coat of stomach and intestines, or of diaphragm and anterior abdominal muscles or of both combined. As I took him by the hand and called him by name he instantly became so convulsed that three men could with great difficulty restrain him. The paroxysm lasted thirty or forty seconds. I now gave him *Tartar emetic*, but from the extreme rigidity of the facial muscles, it was next to impossible to introduce the spoon between his teeth. When the spasm had relaxed sufficiently to admit of free deglutition, I gave him copious draughts of milk. The emetic was repeated. The convulsions continued to recur with considerable regularity every fifteen or twenty minutes, persisting each time from thirty to forty seconds. With faint utterance he said he had taken half a teaspoonful of *Arsenic* three times. He suffered intensely in stomach and bowels, not simply when the spasms were on him,

but in the quiet interims as well, as was no less plainly evinced by his repeated pressure of the abdominal walls with his hands, by the forward inclination of his body (to relax the abdominal tension) and by the frightful anxiety of his countenance, than positively asserted by himself. The convulsive paroxysms were attended with wild, staring, blood-shot eyes, with imprecations and fearful ravings, and with maniacal fury. Previous free indulgence in intoxicating drink may have served to intensify the delirium of the paroxysms. When the convulsions ceased he invariably sank into a temporary prostration, that so nearly resembled his anticipated death that none but a physician could suppose him still alive. His pulse during the interludes was irregular, uneven, intermittent, and accelerated. Now and then an ineffectual effort at vomiting was made. The *Peroside of Iron* was now given with great relief; there were two free vomitings, the liquid part of the vomit being much more than the quantity of milk taken. The pain subsided after the first vomiting, leaving a severe headache, and more quiet delirium. At 10.30 p.m. I found him quite talkative, and clamouring for bread (he had omitted his dinner that day). He felt well, except a general soreness and inordinate hunger. Next day at 8 a.m. he was sitting up, but gloomy, morose and irritable; complained much of sore lips, mouth, and throat. At least two hours elapsed between taking the poison and the *Iron*.

291. *New York Journal of Medicine*, 1858, 3rd series, vol. v, p. 64.

By Dr. Stephen Griswold.

James F—, æt. nearly 13 years, was engaged in manufacturing paper in which *Scheele's Green* was used. He first complained of headache at 11 a.m. March 23rd, and gradually got worse; about 6 p.m. he became senseless, seeming to be in a deep sleep; and died in forty-five hours from his first complaint of headache. He had coughed very much for the previous two weeks; at times he could hardly speak, being choked, having so short breath.

Post mortem. Left pleural cavity contained about a quart of colourless liquid. Posterior surface of that lung completely covered with soft false membrane, as was also pleural surface of diaphragm and anterior surface of posterior wall of thorax. Posterior and inferior portion of lung intensely congested.

Right lung congested at inferior portion. Stomach and intestines inflated with gas. Peritoneal surface of abdominal viscera presented an unusually pearly appearance, with the exception of some small intestine lying posteriorly on the left side, which was streaked pinkish, and another portion three or four inches long, lying near this, of a darker hue. Pleura very much inflamed; very slight adhesion.

Dr. Griswold first saw him at 8.30 p.m. March 23rd. He was lying on back in bed, partially comatose, writhing and twisting himself from side to side, but so prostrated in strength as to be unable to rise or sit up. His countenance had a peculiarly pale greyish appearance. Skin cool, lips cold and livid, eyes dim and glassy, Constant feeble moaning. When roused and asked a question he seemed to but partially understand, and though he appeared to try to make some answer to questions, his answers were wholly unintelligible. After much effort a hasty view of his tongue was obtained, which was clean, moist, and pale. Breathing imperfect and irregular, being short and quick, and more slow and gasping, by turns. Pulse very feeble and irregular; for a second or two it would be a succession of minute thrills so small as to be scarcely perceived, and too rapid to be counted, and then would follow two or three more perfect pulsations.

His mother reported that he came home a little after noon, with cravat tied round head. He ate nothing, but drank some coffee, and then rested head on hands. He was silent, but in answer to questions said that the smell of the green paint made him sick. He then got on the bed, and fell into a kind of doze. He took some *Senna and Salts*, and vomited about a quart of greenish bilious-looking fluid. The next two doses he vomited immediately, so she laid him down again, and he again became stupid. About 5 p.m. she held him up, with his feet in warm water, when he was again taken with vomiting without having drank anything; finally he fell back like a log of wood. At 6 p.m. she could not open his mouth with a spoon. At first he complained all of the pain in his head, but afterwards of some pain under arms.

From 11 p.m. to midnight there was a trifle more heat of skin, and the pulse the least degree more steady.

March 24th, 9 a.m.—From 2 to 4 a.m. had been more quiet, having apparently slept; after which he had aroused with more

consciousness. Found him less stupid, and able to answer questions by a feeble "yes" or "no." He manifested pain, especially on making pressure on lower part of sternum. He had urinated and purged two or three times during the morning. Breathing more regular, about 40 to 50 per minute. Pulse steadier, but still very feeble and variable, about 120 to 130.

About noon, breathing rapid and very difficult; small frequent pulse, tongue pale and somewhat coated, somewhat anxious, restless, partially comatose, great pain in chest, and crepitation therein, eyes sunken.

About 1.30 p.m. again comatose and unable to speak, but constantly moaning; respiration increased to 50 and upwards; pulse to 130 and upwards, very irregular. Since morning abdomen had become distended and tympanitic.

About 5 p.m. in a stupid state from which he could only be roused with great difficulty, and could not answer intelligently. Very restless, constantly tossing about; countenance ashy; eyes dull; lips livid; breathing 50 and upwards; pulse 130 to 140 and upwards; heat of skin much increased, very much prostrated, had had more purgings, and recently passed about two quarts of thin yellow fæces. There was also a cloudy purpuric condition of the skin, especially marked on anterior surface of thighs, remaining after death.

Thomas Turnbull, who worked with deceased, said that the work made his nose so sore that it bled; he also coughed up phlegm streaked with blood.

John Hennisy, who also worked with the same green colour, said that it caused on him a rash under arms, extending to sides of chest, and at elbow-joints, and on hands; his nose would swell a little, and break out with the rash. The rash came out in fine pimples, on the nose first. The boys working there would often have a sore nose.

Several witnesses stated that the genitals are especially liable to be affected with the rash; mouth also is made sore, affecting gums and edges of tongue in particular; feet and legs are also affected; and Hennisy was once laid up for two weeks from that cause. One lad said he would get light-headed, so that sometimes he would feel as if he had no cap on, and would be looking for it when it would be on his head all the while. *Arsenic* was found in the body.

† 292. *Madras Quarterly Journal of Medical Science*, 1867, vol. xi, p. 304.

By Dr. F. Duckworth.

May 6th.—Mr. J. S—, æt. 53, was suddenly seized with violent sickness. He had eaten curry and rice and drank his usual cold tea. The curry tasted bad and nauseated him while eating, so that he drank some tea, which only made him worse, and within five minutes he vomited three times. I found him seated on a chair and vomiting incessantly. I promoted vomiting by copious draughts of lukewarm water. He became very faint and prostrate, and warm spiced brandy and water was given, but vomited. There was burning pain in the epigastrium, and along course of œsophagus, and a strong metallic (coppery) taste in mouth. Cold sweats broke out profusely over surface of body, countenance became dusky, respiration hurried, voice weak and husky, and pulse small and scarcely perceptible. Temperature of body rapidly fell, and this was succeeded by violent and increasing cramps in calves, and both upper and lower extremities became rigid and painful with spasms. Soon after, all the muscles of body suffered excruciating spasms, and he was in great agony, and expressed himself as if dissolution were at hand.

All these symptoms were fully developed in three hours' time. The stomach rejected all that was given. Intellect was perfectly clear, but he was evidently very apprehensive and much agitated and troubled about his absent family. *Chlorodyne* now relieved the spasms and irritability of stomach.

5 p.m.—Spasms abated in violence and frequency, but vomiting continued at intervals.

6 p.m.—Slept a little, and woke somewhat refreshed, but very thirsty and anxious for cold water. Some cold arrowroot was retained. Pulse gradually rose, and skin was not so cold or damp. Urine suppressed since morning.

7th.—Slept well; complains of headache, bad taste in mouth, and soreness in epigastrium and throat; no cramps since last evening, though limbs feel stiff and painful. Bowels confined; urine still suppressed. Ordered *Castor Oil* and *Aqua Menth.*

8th.—The oil was rejected after a few minutes, since which he has been much nauseated and sick, vomiting occasionally. Is restless and nervous; pulse small and weak; skin warmer; passed some bright-coloured urine about 4 p.m. yesterday; felt

some cramps in calves only, relieved by dry friction : no appetite. Ordered *Rheum*, *Magn. carb.*, *Soda carb.*, and *Cinnamon*.

Evening.—Several very dark, offensive and bilious stools ; skin getting hot and pulse quickened ; headache and feeling of deep pains in vertex. To apply cold evaporating lotion to head.

9th.—Slept badly early part of night, and about 2 a.m. became very nervous, agitated and delirious, suspecting people were about the house plotting against his life. Jumps out of bed suddenly and runs after imaginary objects, and stares wildly and suspiciously around him, and at every one who makes the slightest noise or stirs ; is incoherent ; head hot ; pulse quick and soft. To continue lotion, and take *Opium* and *Camphor*, after which he soon slept, and woke about 7 a.m., more calm and collected and free from incoherence, though still very timid and nervous. He speaks about some unaccountable dread that he feels. Is suspicious of the natives about him without cause, but is reassured by a little reasoning with him.

10th.—Better night ; free from delirium, but still very nervous and suspicious. Sore mouth and pain in epigastrium on pressure. Very offensive and bilious stools last evening ; urine light-coloured and more copious.

11th.—Less soreness in epigastrium, course of œsophagus, and mucous membrane of mouth ; eyes a little inflamed and painful. Urine more copious ; no stool.

12th.—Sleep not so good. Slight coppery taste in middle of tongue, which is foul in centre, red and excoriated at tip and margins. Mucous membrane of cheeks and gums also sore ; eyes less inflamed ; light-headed : cannot stand up for any time. Costive ; pulse 80, soft and regular : and by 22nd was able to leave home.

Arsenic was found in the food ; some of it was given to a dog, and violent sickness, salivation and vomiting ensued in ten minutes.

293. *Madras Quarterly Journal of Medical Science*, 1862, vol. v, p. 460.

By Dr. J. Shortt.

A gentleman who slept in a room papered with *Arsenical* paper woke unrefreshed, with a feeling of malaise, nausea, loss of appetite, diarrhœa, and sometimes syncope, thoroughly unfitting

him for his work ; towards evening this feeling gradually passed away and he felt better. He improved as soon as he gave up the room.

294. *London Medical Gazette*, 1847, vol. ii, p. 555.

Poisoning of W. H. Johnson with *Arsenic*. He retched very much, as though he wanted to vomit, but could not. Dr. John Hepworth found him with severe pain in bowels, and he had vomited frothy mucus ; intense thirst, and slight pain about stomach ; had been purged very much ; uneasiness in throat—a kind of choking sensation.

Post mortem.—Extravasation of blood in lining of stomach, which was inflamed ; the same appearances throughout the whole of interior of bowels, but diminishing gradually in intensity from stomach downwards ; upper curvature of stomach much inflamed, lower curvature but little affected. Lips excoriated externally and gullet much inflamed. Inner lining of bladder inflamed, and opening of urethra into it much so. An unusual scarlet colour about lungs. Frothy mucus at mouth and nostrils.

295. *London Medical Gazette*, 1847, vol. ii, p. 124.

By Dr. R. Elliot.

Post mortem of Mrs. Mary Thompson, six or eight hours after being found dead. Head, neck, sides and back livid ; hands slightly so, and half closed ; eyes dull, pupils rather dilated. Stomach externally presented in front a general reddish tint, with a very markedly inflamed part near to where gullet joins stomach ; here the surface was flaky over a space equal to the size of a crown piece. Internally many patches of redness mostly opposite to the part on outer surface just noticed as the most inflamed. On inner surface of this same portion were several small ulcerations about the size each of a split pea, with arborescence or vascularity, much more around their margins than elsewhere. Stomach contained a few ounces of liquid like oatmeal gruel tinged with bile. Liver larger and paler than natural. Internally increased redness of first portion of small intestine, and in last portion of large intestine. *Arsenic* was found in body.

296. *London Medical Gazette*, 1847, vol. ii, pp. 515, 217.

Reference to M. Demarquay's recent reports in *Gazette Médicale*. He says that *Arsenic* causes a diminution of temperature.

297. *London Medical Gazette*, 1847, vol. ii, p. 257.

By Dr. Fenwick.

Post mortem from poisoning by *Arsenic* which was found in body. Inflammation of stomach and upper part of small intestines, chiefly in former, and becoming less lower down. Congestion of lungs.

298. *Boston Medical and Surgical Journal*, 1851, vol. xliii, p. 19.

Case of James Sumers referred to; see original in *Western (Cincinnati) Lancet*.

299. *Boston Medical and Surgical Journal*, 1854, vol. xlix, p. 258.

By Dr. C. B. Galentine.

Poisoning by "*Cobalt*," *fly poison* (which is stated afterwards at p. 285, &c., to be not *Cobalt* but a form of *Arsenic*). A child two years old took about a gill of the fly poison. When seen after two or three hours it was pale and prostrated, with a small, sharp, quick pulse; had vomited moderately, and with evident pain in epigastrium; some inclination to be stupid or comatose; extremities cold; pupils dilated, and but moderately affected by light. Next morning after treatment nearly well.

300. *Boston Medical and Surgical Journal*, 1854, vol. xlix, p. 42.

By Dr. A. A. Hayes.

Several persons took a large quantity of *Arsenic* in coffee. They had nausea or vomiting, but no other symptoms.

301. *Boston Medical and Surgical Journal*, 1854, vol. xlix, p. 518.

The trial of Thomas Slyder for the murder of Peter Cork, extracted from the *West Chester (Pa.) Medical Reporter*.

Post mortem.—Lungs congested with blood. Stomach ulcerated inside. Mouth and eyes firmly closed; limbs rigid; a little blood issuing from anus.

302. *Boston Medical and Surgical Journal*, 1857, vol. lvi, p. 288.

Mrs. M. M.—, of Baltimore, took *Arsenic* in evening. At midnight she had vomiting and severe cramp in stomach, and shortly after died.

303. *Boston Medical and Surgical Journal*, 1857, vol. lvi, p. 459.

Extracts from the Records of the *Suffolk District Medical Society*.

Dr. Durkee gave the Asiatic pill (which contains *Arsenic*) to a man for skin disease for six months, when he complained of a peculiar prickling sensation in the muscles of the forehead, which disappeared on omitting the *Arsenic*.

Dr. J. M. Warren said he gave *Fowler's Solution* to a young lady for a skin disease; beginning with three drops a day, and gradually increasing the dose. At the end of three weeks her eyelids were swollen.

Dr. Morland had seen nausea and diarrhoea result from the Asiatic pill. Dr. Durkee had seen itching of the eyelids from the same cause.

304. *Medical Times and Gazette*, 1857, New Series, vol. xiv, p. 177.

Dr. W. Hind's case.

Dr. Hind used a room papered with *Arsenical* paper. After an hour and a half to two hours, symptoms of severe depression seized him, soon followed by feeling of nausea and inclination to vomit. There were occasional severe pains in abdomen also, and the prostration was presently accompanied with feeling of faintness, which suspended his reading. The same occurred every evening when he used the room. The symptoms gradually subsided when he left the room, leaving a feeling of feebleness and some stomacheic derangement. They never came on under other circumstances.

[This case is apparently the same, but in greater detail, as that recorded in Case 1 of *Pathogenetic Record*.—E. W. B.]

305. *Medical Times and Gazette*, 1857, New Series, vol. xiv, p. 520.

By Dr. Hinds.

A gentleman had two parlours papered with *Arsenical* paper.

In less than a week he and his wife became ill. The symptoms were severe prostration of strength, headache, low febrile state of system, inflammatory state of conjunctiva, thirst, loss of appetite, heat and dryness of throat, and tightness across forehead. General inaptitude for exertion, and general prostration of strength, appeared prominent. A parrot in the room also became ill. It manifested thirst and languor, refused food, and seemed constantly drooping. The persons recovered when the paper was removed.

306. *Medical Times and Gazette*, 1858, New Series, vol. xvi, p. 569.

Reference to Bunsen's experiments copied from *Galignani*, and to a recent case of poisoning at Genoa.

307. *Boston Medical and Surgical Journal*, 1845, vol. xxxi, p. 38.

By Dr. G. W. Hazeltine.

March 22nd.—A woman took a large quantity of *Arsenic* about 5 p.m. About 6 p.m. I found her very much agitated, and complaining of pain in stomach and bowels. An emetic of warm milk, *Sulphate of Zinc*, and *Ipecac.* was given. The milk when returned by vomiting tasted sweet. At 10 p.m. gave *Ferri Carb.*

23rd. 8 a.m.—Vomited most of the powders, having retained them some time, and had two copious and very foetid stools, after which she became easier and slept three hours. Complained of little pain, but great soreness of abdomen, with some tenesmus. Pulse hard. Was bled to sixteen ounces.

6 p.m. Occasionally severe pain of bowels; soreness and tension the same; pulse still hard. Repeat bleeding; gave *Magnes. Sulph.*; *Cataplasma Sinapis* to abdomen.

24th.—Better.

There remained for some time a disposition to colic which would leave the bowels sore for a time; but she eventually recovered.

308. *Boston Medical and Surgical Journal*, 1845, vol. xxxi, p. 316.

By Dr. Lewis Hurd.

Poisoning by "Cobalt" fly-poison [*Arsenic*; see Case 299.—E. W. B.]

A boy aged two years took the poison at 6.30 p.m. He vomited freely in ten minutes, and continued to do so at short intervals for an hour or so; by means of which considerable quantities of a fluid substance were ejected from stomach. I was sent for at 7.30 p.m., and on arrival found him asleep; pulse rather more frequent than natural, but no other symptoms. In fifteen to twenty minutes he woke, and took a draught of warm milk, which was in a short time vomited; soon after there was a copious stool; after this he felt easy and fell asleep. Soon after was alarmingly worse; breathing hurried and laborious; pulse small and very frequent, could hardly be counted; thirst urgent and almost unquenchable; extremities cold; face expresses great suffering and distress. Gave *Opiates* and diffusible stimuli; sinapisms to feet, and friction and heat to extremities. In about fifteen minutes he became comparatively easy: pulse fuller and more distinct; extremities warmer. But the above symptoms soon returned with increasing violence; pulse became smaller, weaker, and more frequent; breathing more hurried, irregular, and laborious; extremities permanently cold, and covered with a clammy sweat; much writhing and other evidence of pain and suffering: eyes rolled up and fixed in orbits. Very soon all the symptoms increased; face became exceedingly pale and sunken; pulse and vein became extinct; slight coma ensued; and he died at 2 a.m., seven and a half hours after the poison.

309. *Boston Medical and Surgical Journal*, 1861, vol. lxiv, p. 121.

By Dr. C. T. Jackson.

A lady, from cutting out the figures on ninety yards of *Green border paper*, had burning in the throat, nausea, and diarrhoea.

310. *Medical Times and Gazette*, 1852, New Series, vol. iv, p. 170.

By Dr. W. G. Everett.

A boy aged 11 years took between nineteen and twenty grains of *Arsenic* in bread and butter. He took an *Antimonial* emetic, and other treatment was resorted to. Next day, when I saw him, he had vomiting, diarrhoea, tormina, &c., and the abdomen was tender and tympanitic. In a few days he was convalescent. The first vomiting was half an hour after the *Arsenic*.

311. *Boston Medical and Surgical Journal*, 1847, vol. xxxvi, p. 398.

By Dr. C. A. Hall; from the *Buffalo Medical Journal*.

Half a teaspoonful of *White Oxide of Arsenic* was put into a pudding and the greater part eaten by two persons. In less than half an hour severe and distressing sickness came on, with vomiting and great prostration. The *Hydrated Peroxide of Iron* was given. In less than half an hour there was decided relief, the retching and vomiting occurring at longer intervals and with less severity. The pain and faintness continued more or less during the night. Next day vomiting occurred but once or twice, and in only one person. In the meantime, however, a new train of symptoms came on: swollen tongue, burning pain and considerable inflammation in throat, accompanied with great thirst, and in one of the cases with hiccough, and much tenderness of epigastrium. Stools were dark and offensive, and attended with pain and tenesmus. There was for a long time great prostration of strength.

312. *Boston Medical and Surgical Journal*, 1848, vol. xxxvii, p. 239.

By Dr. Thomas Sanborn.

June 7th, 1847.—Mrs. R— and daughter were seized with vomiting directly after breakfast. The daughter had been subject to sick turns, as she had phthisis of several years' standing. Mrs. R—'s symptoms were vomiting, pain in epigastrium, purging, white tongue. Was relieved by *Mercury* and *Morphia*, but the symptoms returned on 9th, and continued till morning of 11th, when she died.

On August 18th was called to visit the daughter, who was expecting her accouchement. Immediately after breakfast, not exceeding twenty-five minutes, and some in much less time, all the family were seized with vomiting, most of them with severe burning pain at epigastrium, followed by purging, and spasm of abdomen and extremities, extreme anxiety of countenance, and deadly paleness. All recovered in a few days, except Mrs. A—, who died on fifth day, with symptoms of gastro-enteritis. When I rose from the table I felt unwell, and in a few minutes felt nauseated and vomited the food. On returning in about thirty minutes found that all (five in number) had vomited, and

were in great distress. *Arsenious acid* was found in the tea, which had been brought from the house where the first fatal case occurred. *Ipecacuanha* and *Mustard* emetics were given. I took myself also *Carbonate of iron*, and *Slippery elm*. Vomiting returned at intervals. On reaching home I repeated the medicine. Vomiting subsided after moving the bowels with enema, not being able to retain *Oil* on the stomach. Had palpitation on making exertion to move.

19th.—Had headache; eyes injected and painful; tongue white; burning heat in skin; eruption about neck and face; but little burning in stomach,

20th.—Much better. Tongue continued white for about ten days. On tenth day considerable burning and pain at epigastrium and right hypochondrium, increased on exercise.

Castor oil and *Carb. of Iron* gave relief to the burning. This was taken several times during the first twelve days. Bowels were torpid; stools of a leaden colour for about three weeks, when they gradually assumed a healthy character. Health completely restored in thirty days.

Post-mortem.—Mrs. R— (after nearly six weeks). Mucous coat of stomach pulpy and highly injected; peritoneal coat very florid, increasing on exposure to air. Near pyloric extremity, appearance of ulceration. Mrs. A—. Stomach much inflamed, also duodenum. Peritoneal coat quite florid. The odour referred to in a note by Dr. Griffith, editor of *Taylor's Medical Jurisprudence*, was distinctly observed in both cases.

313. *Boston Medical and Surgical Journal*, 1851, vol. xlv, p. 469.
By Dr. A. J. Skilton.

Mrs. P—, æt. 32, took two drachms of *Arsenic* about 2 p.m., April 23rd. Within fifteen minutes had extreme thirst, heat at stomach, and vomiting; drank cold water frequently. Gave *Tartar emetic*. At 2.30 p.m. thirst and heat at stomach increasing, with pain and constriction at upper part of œsophagus, pain at epigastrium, with violent cramps at stomach, of a peculiar kind. Frequent vomiting. Incessant and urgent calls for cold water; she drank often of it, and vomited frequently. She took three pints of *Tobacco* infusion before 6 p.m. Up to that time the cramps were increasing in violence. At 6 p.m. vomited less often; great tenderness at epigastrium; headache. Other

symptoms not much changed. Continued *Tobacco*, a table-spoonful every half hour. At 8 p.m. tenderness at epigastrium, with heat and thirst, not increased. Vomits only from the attempt to swallow the nauseous infusion. Cramps a little less severe; headache; drowsy and chilly by turns; at other times she "felt first-rate." At 10.30 p.m. tongue slightly swollen, not red. All symptoms better, except the headache, which might be the effect of *Tobacco*; continue treatment.

April 24th, 8 a.m. Has slept from 2 to 6 p.m. Considerable soreness at epigastrium on pressure. Headache and drowsiness on being questioned; tongue slightly swollen and a little reddened; thirst, and heat in œsophagus and stomach nearly gone. Has had two dark stools, the first chiefly solid, with no peculiar sensation; the second thinner, flocculent, greenish, and causing smarting at anus. Repeat infusion, and give *Castor oil*. At 2 p.m. very little uneasiness at stomach; heat, thirst, and stomach tenderness not all gone. Has had three or four stools, greenish, and causing smarting. At 7 p.m. almost well.

Reference is made to two cases of *Arsenical* poisoning cured by *Tobacco*, recorded in *Silliman's Journal*, some two to four years previous to 1838.

A negro child, aged 4 or 6 years, ate *Arsenic*. It was suffering great distress, with short moans; thirst; heat and tumefaction of abdomen; some spasmodic action of intestines and abdominal muscles. *Tobacco* cured it.

Mrs. A— took *Arsenic*. Eventually rigidity and paralysis came on, and it was some two years before she could hold and use the needle.

314. *Boston Medical and Surgical Journal*, 1855, vol. li, p. 189. Extract of Tschudi's report from *Journal de Chimie Médicale, de Pharmacie, de Toxicologie, &c.*, July, 1854.

Suspension of *Arsenic*-eating is followed by general uneasiness, great indifference for everything around, anxiety, disturbance of digestion, loss of appetite, sensation of fulness at stomach, vomiting of a glairy fluid in morning, ptyalism, pyrosis, spasmodic constriction of pharynx, spasmodic pain, constipation, and especially embarrassed breathing.

A man who took an overdose had violent colic, burning pain in throat, and griping at stomach, &c. Since he has ceased

taking *Arsenic* he is frequently subject to violent gastrodynia. It also caused a thickness and roughness of voice, which is very general among *Arsenic*-eaters.

315. *Medical Times and Gazette*, 1852, New Series, vol. iv, p. 139.

By "Cosmopolite."

A woman took half an ounce of *Arsenic*. Had great pain in stomach. An emetic was given, and three days afterwards she was well.

316. *Medical Times and Gazette*, 1851, New Series, vol. ii, p. 413.

Additional symptoms to Dr. Ryan's case, given in No. 64 of *Pathogenetic Record*.

On the first visit extremities were cold and damp ; pulse quick, feeble, small, about 80. Feeling of great prostration, and yet he frequently quickly raised himself on his elbow to vomit ; he did so with a sudden effort, and then fell back exhausted. Severe pain in epigastric and hypochondriac regions, much increased by pressure. The first basinful of vomit had been removed ; the second contained about four quarts of a yellow, the third about three quarts of a very dark green fluid. He wandered a little during first visit, and imagined he saw people in the mirror.

On Thursday night (the 15th) the pains increased intensely, with extreme thirst. Next morning, very thirsty, very impatient, and restless from severe burning pain and spasms of extremities.

Mr. Wade said he saw the patient on the evening after he had taken the poison. The symptoms were then more those of nervous prostration than of inflammation, and so continued throughout. He was dozing and muttering to himself, not apparently suffering, and answered rationally if spoken to in a loud voice. He complained of pain and a burning sensation, with constriction at lower part of chest, and also in hepatic region. Pulse was a mere thread ; tongue blackish, with a coat of bloody mucus.

317. *Medical Times and Gazette*, 1866, vol. ii, p. 222.

By Mr. W. Whalley.

March 13th, I saw a boy æt. 13, who had used *Magenta Dust*

(proved to contain *Arsenic*) in printing, five days previously. On coming home on evening of that day he shivered and felt unwell; in night he got out of bed, complained of colic, and was so giddy that he could not get into bed without assistance. Next day nearly all the symptoms of to-day were present. To-day lips, nose and eyelids are swollen; skin hot; throat feels dry; dry cough; severe headache; intolerance of light; urine scanty; great prostration of strength; feels sick and nauseated; tongue coated with a brown fur; no stool for four days; loss of appetite. He had previously suffered from a similar attack from the same cause.

318. *Medical Times and Gazette*, 1851, New Series, vol. iii, p. 229.

By Mr. R. Jeffreys.

At 2.30 p.m. I saw Mrs. J. D—, æt. 39; she was supported in a chair in a state of collapse; cold, pulse almost imperceptible, lips and fingers livid, conjunctivæ red, and countenance expressive of the greatest anxiety and distress; did not speak or appear to be conscious; rapidly sinking; had neither vomiting nor diarrhoea after I saw her. After a time we lifted her on the bed, where she remained about half an hour, when, becoming more and more restless, she endeavoured to get out; she was assisted to a chair, and there she died calmly at about 3.30 p.m.

She had been quite well up to dinner time, which was about 12.30 p.m. or 1 p.m., but ten minutes after dinner she was attacked with vomiting, purging, pain, and faintness. *Arsenic* was found in the food.

Post mortem (after forty hours).—External coat of small intestine, stomach, uterus, and bladder very vascular; bladder extremely contracted. Stomach contained about four ounces of dark fluid, with food; mucous coat covered with a tenacious, mucous secretion, and parts of the same with red ecchymosed patches, highly inflamed; a dark, tenacious, bloody patch, about three inches in circumference, near cardiac extremity, with a corrugated state of rugæ, having very much the appearance of disorganisation; pyloric extremity highly inflamed.

About four months afterwards examined stomach microscopically, but could not detect any *disorganisation* beyond a few abrasions of villous coat, not visible to naked eye. The minute

mucous cells in inflamed parts (being only about $\frac{1}{200}$ th of an inch in diameter) were like so many little ink dots, the consequences, I imagine, of blood having escaped with the mucus from them. The large extravasated patch had disappeared, in consequence, perhaps, of maceration leaving the surface underneath smooth and nearly entire, but highly vascular.

319. *Boston Medical and Surgical Journal*, 1862, vol. i, p. 524.

By Dr. E. Symes Thompson.

Effects of *Arsenical* paper on the workmen. Nausea, languor, sleeplessness, diarrhoea, tenesmus, conjunctival irritation, pyalism, alopecia, general wasting, and that "nameless feeling of illness" so characteristic of *Arsenical* poisoning.

320. *Boston Medical and Surgical Journal*, 1861, vol. lxiii, p. 299.

By Dr. Ira L. Moore. Read before the *Suffolk District Medical Society*.

A young man, æt. about 21, took about 160 grains of *Arsenic* in water at 11 p.m. In about two hours (1 a.m.) he began to vomit and purge, and continued so every few minutes till 8 a.m., when he was found to be vomiting and purging almost incessantly. The vomit amounted to two quarts, and was of a dark chocolate colour. There had also passed by stool eight quarts of dark greenish fæces. He complained of *terrible* distress in vomiting, and of severe burning pain, or rather distress, in hypogastric region. Pulse 140, small, and weak; expression of anxiety about countenance; skin cold and moist; lips dry and parched; tip of tongue red. The *œdema arsenicalis* appeared in about fifteen hours after the poison. He recovered under treatment, and, forty-two hours after the poison, left for New York. At the time he left he had not sat up for a moment, and seemed like a person who had had a severe attack of cholera morbus.

Another young man took a teaspoonful of *Fowler's Solution*, which, in ten hours, caused so much œdema of eyelids as nearly to close them.

321. *Northern Journal of Medicine*, 1845, vol. iii, p. 262.

By Mr. James M. Adams.

CASE 1.—Mary R.—, æt. 24, took six drachms of *Arsenious Acid* in water at 6.15 p.m. In about fifteen minutes she became

sick and vomited freely. She then went home, where she became rapidly worse with occasional vomiting. At 10 p.m. we saw her in bed; her features were cadaverous, sharpened, and expressive of great anxiety; eyes prominent, bright red, and sparkling; surface of body cold and clammy; pulse quick, fluttering, and very feeble; great prostration of strength; complained only of a sense of extreme faintness. Vomiting had ceased for last half hour. Two large doses of *Sulphate of Zinc* were given without exciting vomiting. She then took frequent draughts of milk with *Magnesia* in it. Severe, but ineffectual, attempts to vomit now occurred. About this time she passed a small quantity of urine with much pain and difficulty, and shortly afterwards was seized with involuntary diarrhoea. A little before 11 p.m. we applied the stomach-pump. On introducing the œsophagus tube vomiting was excited, and considerable quantities of the contents of stomach were withdrawn. Very soon after she was seized with excruciating pain in epigastrium, and repeatedly exclaimed that "her inside was burning." She called incessantly for cold drinks, which were freely administered. Her pulse shortly became imperceptible, and the heart's action feeble and ascertained with difficulty. At 11.15 p.m. convulsions came on, with delirium; pupils became dilated; she sank rapidly, and died at 11.30 p.m.

Post mortem (after twelve hours).—Large livid discolorations on trunk and upper extremities. Alimentary canal, from stomach to sigmoid flexure of colon, much contracted, and its serous surface closely injected with bright arterial blood, giving it an inflamed appearance. Peritoneum *generally* had a peculiar dry and *waxy-like* aspect, very markedly different from its ordinary appearance. Inner surface of stomach, especially towards cardiac end, lined with a dark red pulpy substance, composed, apparently, of extravasated blood mixed with mucus. Several dark elevated patches, of a fungoid appearance, were scattered over inner surface, but were found principally towards pylorus and in duodenum. Greater portion of inner surface of stomach corrugated into thick prominent rugæ, between which, and especially in vicinity of the dark patches referred to, quantities of a yellowish powder were found closely adherent. Villous coat, together with the pulpy substance alluded to, easily detached with finger-nail, exposing scattered patches of extravasated blood;

and the whole organ seemed thickened, and felt soft and gelatinous. Several parts of intestines presented similar appearances upon a smaller scale. Bladder firmly contracted, and its mucous lining streaked with red vessels.

CASE 2.—Peter M'N—, æt. 56, took half an ounce of *Arsenious Acid* on November 23rd. In about three quarters of an hour he became sick and vomited freely. Profuse purging came on shortly after, and, together with the vomiting, affected him two or three times during same evening. For some days he kept indoors, but made no complaint.

On 26th he walked a mile to another lodging.

On 30th he became suddenly and severely ill; he was quite collected; breathing quick and anxious; mouth dry and parched; tongue dry and dark brown; pulse 65, small; frequent dark watery stools; considerable epigastric tenderness; constant desire for drinks, but could take no solids. Cupping over the epigastrium and mucilaginous drinks relieved him; but six hours afterwards he became comatose, his extremities cold, and pulse imperceptible. Pupils became contracted, with strabismus; mouth parched, breathing laborious, and great restlessness. He sank rapidly, and died nine days after the poison.

Post mortem in twenty hours. Discoloured patches on body. Great emphysema of lungs, especially the right. In pericardium nearly five ounces of serum. Heart enlarged, though not to a very marked degree. Stomach dilated, and a slight but distinct contraction divided pyloric from cardiac end. Serous surface of stomach congested with dark vessels, and cardiac portion quite black. A quantity of thick, brown, muddy-looking fluid was removed from interior of stomach, having flakes of coagulated mucus floating in it. At cardiac extremity and corresponding to the blackened portion already mentioned, the villous coat, in an extent of three or four inches, was also black, caused by extravasated blood lying beneath the membrane. Duodenum had much the same appearance as stomach. Mucous coat of intestines was throughout very soft and pulpy, and peeled off readily with the finger-nail. The whole tract of intestinal tube from œsophagus downwards was congested, and in several parts injected with bright red vessels, both externally and internally. Considerable portions of mucus were thrown out at different portions of intestine, but by far the greatest quantity was found

in rectum, which was also highly injected with red vessels. Mucous membrane of bladder slightly streaked with red vessels.

CASE 3.—John P—, æt. 42, took two drachms of *Arsenious Acid* in water on March 14th, at 8 p.m. Shortly afterwards he became sick and faint; and in two hours afterwards was tormented with a burning thirst, and eagerly desired cold water. At midnight severe purging and vomiting came on, and continued with little interval for three hours. He was then seized with convulsive tremors, "so that the bed shook under him," and these were accompanied by sensations of cold and extreme faintness. As the morning advanced he confessed his crime, believing that his end was approaching. At 8 a.m. (March 15th) I found him sitting up out of bed; countenance pale and sallow, and bore a painful, anxious expression; pulse 120, and feeble; pressure over epigastrium gave pain; surface of body cold and clammy; sickness and inclination to vomit, with occasional tendency to faint; very restless, and now and then paced across the room "to shake off the faintness." Repeated draughts of *Lime water*, tepid waters, powdered charcoal, and *Carbonate of Magnesia*, and infusion of linseed, produced copious vomiting. At 1 p.m. his pulse was 96 and stronger; tenderness across abdomen, increased on pressure; breathing short and gentle. Mucilaginous drinks were freely given, and a large dose of the *Precipitated Carbonate of Iron*, with *Ammonia*. At 8 p.m. pulse was 96, and pain over epigastrium increased. Applied *Blister* over epigastrium,

16th.—During night and towards morning had several slight convulsions. Pupils dilated; conjunctiva reddened, so as to appear inflamed; pulse 96, soft, and feeble; tenderness of abdomen only on pressure; slight tormina, and bowels constipated. To take half an ounce of *Castor oil*.

17th.—Bowels have been opened. Was incoherent and slightly delirious yesterday evening, but during night had several hours of refreshing sleep. Tongue furred, and red at tip; pulse 90 and soft; pain above pubes.

18th.—Excessive debility; occasionally cramps of legs. For the first time expresses great remorse for his crime and its probable consequences.

20th.—Has cough, with pain in throat; no sputa. Posterior parts of mouth and pharynx intensely red and seemingly exco-

riated; gums tender and swelled. A vesicular eruption has come out over the greater part of right ear, and also of nose; several vesicles have coalesced, forming large patches; they are all surrounded by an inflamed base. Severe frontal headache. Abdomen tympanitic, but without pain on pressure, constipated, and bowels feel "wrung together." Cramps of legs return occasionally. To take infusion of *Senna* and *Manna*.

23rd.—Pulse still quick; tongue covered with a white crust; roof of mouth corrugated, and folds of mucous membrane hard and white; palate and pharynx still intensely red; several of the vesicles on ear and face have been filled with pus; difficult swallowing; frequent tendency to vomit; pain in stomach slightly after food; abdomen slightly tympanitic; slight tenderness over epigastrium on pressure; constipated. Complaining greatly of cramps in legs, which are more frequent.

Soon after this date he was much better. About six months afterwards I heard that he had lost flesh considerably; that his general health was far from being as good as formerly, and that he occasionally suffered from affections of the stomach.

322. *Medical Times and Gazette*, 1862, vol. i, p. 70.

Report of the Pathological Society.

Dr. Wilks stated that ecchymosis of endocardium had existed in all the few cases he had seen; and in two recent cases in Guy's Hospital, endocardium of left ventricle was most markedly affected, a large patch existing on septum, and columnæ carneæ were also spotted.

Dr. Harley said the staining was dark purple, and not always in right ventricle.

Dr. Copland said that *Arsenic* caused endocarditis.

Dr. Wilks said that in one case the pyloric end of stomach was acutely inflamed.

Dr. Harley gave particulars of chronic poisoning in an artificial-flower maker. Here the pyloric end alone of stomach was inflamed. *Arsenic* acted on cardiac end however administered; but in chronic poisoning the effects were generally more marked at pyloric end.

323. *Medical Times and Gazette*, 1862, vol. i, p. 497.

Effects of unpacking *Arsenical* paper; by J. D.

Two persons had much soreness of margins of nostrils and contiguous parts of upper lip; they always suffered thus under these circumstances.

324. *Medical Times and Gazette*, 1869, vol. i, pp. 407-8.

By Mr. Hutchinson.

1. A healthy young man took three minims of *Fowler's Solution*, for acne of face, from July 28th to middle of November. At this latter date an eruption of *herpes zoster* with the usual symptoms came out on left side of chest, chiefly below nipple. Never had it before.

2. Mr. B— took *Arsenic* for eczema. After taking it for nearly a month, he was laid up by a very severe attack of shingles on one side.

3. Mr. W— took *Arsenic* for six weeks or more for psoriasis of hands. He had while taking it an unilateral eruption, grouped exactly like herpes, which, however, remained papular, and never developed vesicles. It passed away after ten days, just like shingles.

4. Anne R—, æt. 44, took minims of *Arsenic* three times a day, for psoriasis, from April 9th to June 14th. As she did not feel so well, the dose was then reduced to three minims. Ten days later, an eruption appeared, confined entirely to right side of forehead, with several spots on right eyelid. At commencement of attack she felt great pain all over right side of forehead, which lasted two days, when a good many spots appeared, and the pain was considerably eased. [This case is headed "*Herpes Frontalis*."—E. W. B.].

5. Dr. Woodman reports a case occurring at London Hospital of a child who took three minim doses of *Fowler's solution* for thirty days, for chorea. She had, during the course of medicine, an attack of herpes.

6. A boy, æt. 8, began on January 6th, to take a mixture containing one and a half minim doses of *Liquor Arsenicalis* for eczema of hand, and applied on ointment of *Lead* and *Mercury*. On February 16th he showed a very copious half-zone of herpes on left side.

7. An old lady took *Arsenic* for eczema. She had a most severe attack of shingles on left side.

8. G. M—, æt. 24, took for psoriasis, three minims of *Liquor*

Potassæ Arsenitis, three times a day, and a *Kreasote* ointment. He came again, one week later, with an attack of herpes on prepuce, which he never had before. In about a fortnight it disappeared, though he continued the *Arsenic*.

9. A young man took *Arsenic* for eczema of fingers. He came again in a week with herpes of lips, to which he was not subject.

325. *Medical Times and Gazette*, 1869, vol. i, p. 309.

Review of Dr. Theodore G. Wormley's work '*Micro-Chemistry of Poisons*,' &c., New York. Baillière, 1867.

A child had an *Arsenical* wash applied to head for *porrigo favosa*. It proved fatal in thirty-six hours, causing swelling of face, purging, tenesmus, and paralysis of lower extremities. [Examine work for other cases. E. W. B.].

326. *Medical Times and Gazette*, 1868, vol. i, p. 297.

By Dr. Robert Mc Nab.

A strumous woman, æt. 28, took three minims of *Liquor Arsenicalis*, three times a day, for lupus of face. After taking it for three weeks, suddenly, after feeling ill for a few hours, a copious rash made its appearance on face, hands, and chest, resembling that of measles, the maculæ being slightly elevated, with intervening spaces of skin little affected, and showing papules in some places, vesicles in others. It was accompanied by general catarrhal symptoms; swelling of face, lips, and eyelids; burning heat of skin, yellow furred tongue, gastro-intestinal irritation, and intense tenderness of feet; so much so that standing gave great pain. These symptoms were followed in a few days by complete aphonia. Desquamation commenced about the tenth day of this eruption, but the redness of skin did not entirely disappear for some weeks.

327. *Medical Times and Gazette*, 1868, vol. i, p. 327.

By Mr. Tilbury Fox.

I have recently seen a goodly number of cases of *Arsenical* eruption accompanied by catarrhal symptoms, constituting a disease like measles.

328. *London Medical Gazette*, New Series, 1837-8, vol. i, pp. 577, 585.

Two cases of poisoning by *Arseniuretted Hydrogen*, referred to: one by Ruhland in *Annales de Chimie*, vol. xcv, p. 110; the other that of Mr. Beard, reported in a Cornish paper, in or after the year 1836; also Everitt's lecture, delivered last June to the Medico-Botanical Society. Report of a Committee.—Three linnets were placed into a wooden chamber containing two burning *Arsenical* candles. In about four hours they became dull and stupefied on their perch, though at first they appeared particularly the reverse; they seemed much inconvenienced for the rest of day. In a second experiment they were placed with three candles. They soon showed signs of uneasiness, drooped their wings, breathed laboriously, and kept their beaks constantly open; they continued so all day. Next day two of them became much more distressed after exposure to the candles; an hour later one of them fell, as if from vertigo, from its perch, and in half an hour died. Next day the two survivors, having recovered, were again exposed to the candles, at 10 a.m. At noon one had been seen to gasp for life, unable to remain on the perch, and the other became equally affected by 1 p.m.; both died. A rabbit, under similar conditions, became dull, was constantly lying on side, flanks drawn in, and breathing quick, accompanied with a tremulous motion. These symptoms kept increasing, and at the end of a week of continued experiments eyes were dull, ears drooping, frequent yawning, and the guinea-pigs as well as the rabbit refused corn. They would only take green food, and that in diminished quantities; while they eagerly took water twice in one day. The same species of animals in another experiment refused water.

329. *London Medical Gazette*, 1839-40, vol. ii, p. 266.

By Mr. George Jones.

A lady took for menorrhagia seven drops of a solution of three parts of *Liquor Arsenicalis* to one of *Spir. Lav. Co.*, three times a day. After a fortnight the saliva increased, and the mouth became slightly affected. She continued the medicine, and got worse, with extreme foetor of breath, superficial ulceration of the gums and fauces generally, with increased saliva. The menorrhagia was cured.

380. *British Annals of Medicine*, 1837, vol. ii, p. 80.

By Dr. Watson.

A youth, æt. 17, took a drachm of *Arsenious Acid* in ale at 1 a.m. In half an hour had burning in throat and at epigastrium, and an unpleasant sensation, but no sickness. Stomach-pump was used; he was bled, and took *Chalk* and *Acacia*. At 11 a.m. took *Castor oil*; very sleepy, slight pain at epigastrium on pressure; pulse 120; tongue slightly furred.

331. *Midland Medical and Surgical Reporter*, 1828-9, vol. i, p. 344.

By Dr. William Hebb.

A woman, æt. 30, took a large quantity of *Arsenic* in gruel, and died in rather more than four hours. Incessant vomiting was the most prominent symptom. Mucous coat of stomach was generally much attenuated, and underneath it were a number of specks of extravasated blood, and it was exceedingly vascular; peritoneal coat inflamed.

332. *London Medical Gazette*, New Series, 1844-5, vol. i, p. 750.

By Dr. Kraft. From Caspar's *Wochenschrift*, Oct., 1844.

A woman, a boy of 13, another of 10, and a girl of 11 years, took some *Arsenic* in food. The children soon felt unwell, and hurried to bed, but shortly afterwards began to complain of severe pains in belly and sense of urgent constriction at stomach. The woman was similarly attacked. Under aggravation of these symptoms all were seized with violent and continued vomiting. The *Hydrated Oxide of Iron* was given. By following afternoon the children were well, but the woman still suffered from pain in stomach, headache, and tremors of limbs. The girl and younger boy, just convalescent from an attack of influenza, were almost exhausted by the frightful cramps, lying stiff with their bodies drawn backwards, hands and face cold, covered with a clammy sweat, and apparently near death; the two others seemed almost worn out through continued vomiting, sense of choking, and racking pain of belly. After two doses of the *Iron* they improved. The pain in belly was somewhat obstinate, but vomiting ceased at once, and was followed by frequent liquid stools; after which the children slept quietly till morning, awaking with only fatigue.

333. *London Medical Gazette*, New Series, 1842-3, vol. i, p. 351 (misprinted in "Index" 491).

Errard's cases from *Gazette Médicale*, Nov. 5th, 1842. [Given with slight variations in No. 22 of *Pathogenetic Record*; the tongue is *here* also stated to have been *cracked*; see original. —E. W. B.]

334. *London Medical Gazette*, New Series, 1842-3, vol. i, p. 270.

By Dr. Fiedler. [Query, from Schmidt's *Jahrbücher*, August, 1842.—E. W. B.]

A child ate a piece of green paint containing *Arseniate* [? *Arsenite*.—E. W. B.] of *Copper*. Soon afterwards vomited violently. After drinking a good deal of milk it was quiet; but soon afterwards still more violent vomiting came on, the whole body became cold, and the features distorted.

The *Hydrated Oxide of Iron* cured in five hours.

The author refers to another case reported by him several years ago.

335. *Medical Times*, 1850, New Series, vol. i, pp. 139, 279.

By Mr. Thomas Hunt.

1. A man, æt. 58, took for pityriasis capitis five minims of *Liquor Arsenicalis* three times a day, beginning November 25th.

On January 20th he had conjunctivitis and catarrh.

2. A lady took forty minims of *Fowler's Solution* three times a day for several days. On the third and subsequent days her nerves became irritable, and in less than a week she had tremblings of limbs, dim sight, sensation of exhaustion, and other affections of the nervous system.

3. A lady took for skin disease five minims of *Fowler's Solution* three times a day for three days. She complained of a general tremor of limbs and inflammation of tarsi.

336. *Medical Times*, 1850, New Series, vol. i, p. 192.

By Dr. H. Letheby.

Extract from Stanley's work *On the Bones*.

Oxen, after exposure to the *Arsenical* fumes evolved from copper works, become ill and disabled from disease of the bones, which become enlarged and covered by deposits of unhealthy osseous substance.

The specimens of this disease were placed by Dr. Roupell in the Museum of St. Bartholomew's Hospital.

337. *New Sydenham Society's Publications*, 1864, vol. xxiii, pp. 409-11.

Abridgments of various reported cases. The originals should be examined.

1. Keber (*Caspar*, xxiii, p. 271; xxiv, p. 181) records ten cases. *Arsenic* was repeatedly given in small doses to a man and his wife, producing transitory irritant symptoms. After a time both had anæsthesia of hands and feet, so that pricking and pinching them produced no effect. Their limbs felt as if they did not belong to them. The man suffered from muscular weakness, finding it difficult to rise from his seat, and walking in a heavy clumsy manner, as if his feet were loaded with weights. The strength of his hands was also impaired. The muscular actions of the woman were less affected. *Schaper* has recorded similar symptoms as the result of *Arsenic*. In another case, a girl had vomiting and diarrhoea, but no pain. She was pregnant, and when the body was exhumed the foetus was found lying between the thighs, with part of the membranes within the vagina. The duration of the mother's illness was fifty hours.

2. Casper (*Vierteljahrschrift*, xxiii, p. 193) alludes to a *doubtful* case, the prominent symptoms being headache and drowsiness, and gives some of the effects of *Arsenic*.

3. Köffler (*Allg. Wien. Med. Zeit.*, 1863, p. 93) records the poisoning of 138 persons. Many of them had a pustular eruption all over the body, but especially on face and neck.

338. *New Sydenham Society's Publications*, 1878, vol. lix, p. 463.

Vaudry says (Virchow and Hirsch's *Jahresber.*, 1871, p. 312) that *Arsenious acid* in doses of $\frac{1}{80}$ th to $\frac{1}{10}$ th grain, quickens and strengthens the pulse, facilitates respiration, improves appetite, aids digestion, increases all secretions except urine, imparts muscular activity and a general feeling of comfort, and causes an increase of weight. After it has been given some time the feeling of comfort disappears, but returns when the dose is increased by $\frac{1}{30}$ th to $\frac{1}{15}$ th grain. Doses of $\frac{1}{4}$ th to $\frac{1}{2}$ th grain cause disturbance of intestinal canal. In some persons even $\frac{1}{12}$ th

grain causes diarrhoea. Animals gradually acquire a tolerance of *Arsenic*.

339. *New Sydenham Society's Publications*, 1871, vol. 1, p. 414.

Dr. Du Vivier gave *Arsenic* to two women for psoriasis. Both aborted at seventh month of dead children (see *Annales de Dermatologie*, 1869).

340. *New Sydenham Society's Publications*, 1871, vol. 1, pp. 452-3.

Roth says (*Arch. f. Path. Anat.*, xlv, p. 499) that, while *Phosphorus* causes in stomach only ecchymoses and subsequent hæmorrhagic erosions as visible alterations, together with a sodden appearance of the mucous membrane and submucous tissues, appearances which must be regarded as the results of stagnation of the blood, and that whilst the same passive exudations of blood follow the subcutaneous injection of *Arsenious acid*, the internal administration of the latter, either when solid or in solution, or even of the metal *Arsenic* itself, invariably produces a truly inflammatory condition, and that this exhibits itself by results varying from simple capillary hyperæmia to diphtheritic exudation, with much sanguineous infiltration of the submucous tissues, followed by ulceration, these phenomena being exhibited chiefly in fundus and greater curvature of stomach. When solid *Arsenic* or *Arsenious acid* was given, these appearances were likewise met with in duodenum. A concentrated solution of *Arsenious acid* produced no visible effect when applied to the mucous membrane of stomach after death. Dr. C. E. C. Hoffmann, of Basle, relates (Virchow's *Archiv*, l, p. 455) three cases of *Arsenical* poisoning, in two of which the symptoms closely resembled those of cholera, and in both these a fungus was found in the intestines, exactly resembling in appearance that figured by Klob as a cholera-fungus. Virchow noticed the same (*ibid.*, xlvii, p. 524).

341. *New Sydenham Society's Publications*, 1861, vol. x, pp. 441-9.

References to Schmidt and Bretschneider in *Moleschott*, vol. vi, p. 146, and *Canst.*, vol. v, p. 86; Schroff in *Wien Zeitschrift*, N. F., vol. ii, p. 44, and *Schmidt*, vol. 105, p. 176; Schmidt and Sturzwege in *Moleschott's Unters.*, vol. vi, p. 283, and *Schmidt*, vol. 105, p. 175; Keber and Hoogeweg in *Caspar*, vol. xv, part 2;

Maschka's *Medico-legal Contributions* in *Caspar*, vol. xv, part 1: Fasoli in *Compt. Rendus*, vol. li, p. 172; Chevalier in *Annales d'Hygiene*, vol. xii, p. 49; Oppenheimer in *Verh. d. Nat-med. Ver. zu Heidelberg*, vol. i, p. 220; Ziurek in *Froriep's Not.*, vol. iii, No. 10, and in *Pr. Ver. Ztg.*, N. F., vol. ii, p. 48; Sonnenkalb in *Deutsche Zeitschrift*, vol. xv., p. 94; Müller in *Wien Wochenschrift*, Nos. 18-21; Buchner in *Bayer Arztl. Intell. Blatt.*, No. 46, 1859; Fabian in *An. der. Chem. u. Pharm.*, vol. cxv, p. 102; Erdmann in *Journal für prakt. Chem.*, vol. lxxix, p. 121 (Abstract in *Journal de Pharm.* Jan., 1860); and Ziurek in *Polytechn. Journ.*, vol. clv, p. 465 (Abstract in the same).

Schmidt and Chomse say that the *Oxide of Kakodyl* causes increased action of heart, accelerated breathing, extreme muscular weakness, paralysis of iris, and stupor.

Lorinser gives several cases of poisoning by *Scheele's Green* in wall-paint, in *Wiener Med. Wochenschr.*, 1859, No. 43, 44.

The following is only an *abridgment* of some of the cases:

A woman, *æt.* 54, was affected at various periods with lancinating erratic pains in shoulder-joint and nucha, accompanied with fever. These increased from year to year till the winter of 1857—8, when she became languid, and lost flesh and appetite. She left town and got well. Towards the end of summer she returned. In November she was seized with violent fever, lancinating pains in head and shoulders, and subsequently profuse sweats, followed by disappearance of the fever. The lancinating pains diminished, but she had extremely painful sensations of irritation and distraction in head. These returned regularly every other night and lasted till morning, the attack always terminating in abundant sweating. The lancinating pains continued in shoulders, arms, and epigastrium, after the subsidence of the attack. There was complete anorexia, with clean tongue. The green paint was found to consist of *Arseniate* [? *Arsenite*.—E. W. B.] and *Acetate of Copper*. *Iodide of Potassium* was given, and *Arsenic* eliminated by the urine.

Another woman, *æt.* 17, had languor, anorexia, headache, loss of flesh (attributed to amenorrhœa). The languor increased, she became weaker, paler, and thinner, and, finally, lost her sleep, and had nausea and vomiting. She got well by removal from the room, and taking *Iodide of Potassium*.

A woman, *æt.* 45, had typhoid fever; in five weeks she was

convalescent, but did not recover strength. She had extreme anorexia, sleeplessness, excessive muscular weakness, but a clean tongue and natural pulse. This continued more than a month, and became aggravated by tremors of hands and racking pains in feet. She got rapidly better on removal from the room. *Arsenic* was found in urine. [Was the "typhoid" *Arsenical*?—E. W. B.]

A woman, æt. 24, was similarly attacked with typhoid fever, after which she fell into a state of debility lasting two and a half years. The menses became irregular; she lost appetite, became sleepless, and complained of constant drumming in ears. She recovered immediately on leaving Vienna. On subsequently returning the old symptoms reappeared, accompanied with gastralgia, itching of skin, and occasional nausea and vomiting. *Arsenic* was found in the urine. The green was removed from the room, and she recovered rapidly. [Was the "typhoid" *Arsenical*?—E. W. B.]

342. *American Journal of Medical Sciences*, 1828, vol. ii, pp. 18, 19.

By Dr. Pennock.

Aug. 16th.—Introduced ten grains of pulverised *White Oxide of Arsenic* into the cellular tissue under the skin of the thigh of a large and a smaller dog. In forty minutes the smaller dog began to whine, gave some signs of pain, and had a considerable discharge of saliva.

The larger dog had no symptoms, so on Aug. 17th thirty grains more were inserted. In the course of a few hours it showed signs of pain, restlessness, intense thirst, and great muscular debility, especially of hind legs. The pain became more and more intense, and nausea, vomiting, and purging continued during night. On morning of 18th it died, twenty-three hours after second dose, and forty-eight from first.

Post mortem.—Mucous coat of stomach highly inflamed; subserous tissue of stomach and intestines congested with blood. Very dark blood in both ventricles of heart.

343. *American Journal of Medical Sciences*, 1829, vol. v, p. 287.

By Dr. Samuel Jackson.

Case of *supposed* poisoning by *Arsenic* [omitted as doubtful.—E. W. B.].

Dr. Male has frequently found rectum more inflamed than stomach in *Arsenic* poisoning ; Dr. Baillie found it mortified in several cases.

344. *American Journal of Medical Sciences*, 1831, vol. viii, p. 249.

Fristo's cases (from *Transactions Médicales*).

[These cases are somewhat differently given in No. 104 of *Pathogenetic Record*. The additional symptoms here given are, pains all over the body ; after death, bodies swelled and ecchy-mosed ; substance of brain inflamed, with a number of sanguinolent spots ; lungs hepatised and engorged.—E. W. B.].

345. *American Journal of Medical Sciences*, 1832, vol. xi, p. 61.

By Dr. H. Perrine.

September 20th.—Dr. Perrine mixed some *Peruvian Bark* in a glass in which 64 grains of *Arsenic* had been left, and drank all except what remained adhering to its internal surface, and then rode six or seven miles to see a patient. On the route he had sickness and uneasiness in stomach, which increased on his arrival, after unavailing efforts to sleep. He then caused vomiting by irritating throat with finger ; after this he had some partial slumber, which was interrupted by frightful dreams, accompanied with increasing uneasiness of stomach, severe pain in head, violent agitation of heart and arteries, and general tremor of the muscles. Four hours had thus passed, when he found he had taken *Arsenic*. This news excited a degree of mental power that apparently regulated and strengthened the hitherto unequal action of the vascular system. He then felt, or thought he felt, preternatural heat in stomach, and as the pulse had certainly become preternaturally strong, he had 40 oz. of blood abstracted, and in eight hours 24 oz. more. He repeatedly filled the stomach with warm milk and mucilaginous drinks, and immediately evacuated them with *Sulphate of Copper*. He took *Salts*, *Senna*, &c., but vomited them at once. After taking *Jalap* and *Rhubarb*, he took 210 grs. of *Calomel* in forty hours, with glysters, blisters, rubefacients, and warm baths. Pulse continued to increase in frequency during next two days till near midnight, when it apparently ceased. The coldness of extremities had by this time almost reached the trunk. During

several hours he was gasping for breath, and suffering all that mortal inquietude which generally denotes the near approach of death. He felt a sense of suffocation and weight on breast, and could barely whisper his desire to be placed in a hot bath. He fell asleep in the bath, was removed to bed, and sank into profound repose. He woke next day at dawn, at first doubtful of a change of existence, and next apprehensive of the occurrence of gangrene. He slowly passed his fingers to his wrist, and discovered perspiration, warmth, and pulsation; there was also a free discharge of saliva. He recovered.

346. *American Journal of Medical Science*, 1834, vol. xv, p. 259.

By Dr. W. G. Ramsay.

Twelve persons were seized with nausea and vomiting directly after dinner (2 p.m.) August 4th.

CASE 1.—Rosa P—, æt. 19, was seized with vomiting, retching, and burning sensation in stomach, directly after eating, followed by convulsions; pupils dilated; skin cool; pulse 120, small, quick, and irregular; when convulsions subsided, she had excruciating pains in head and stomach. An emetic of *Sulphate of Zinc* with warm water was given, which made her vomit freely; took white of eggs; sinapisms to legs; 12 oz. of blood from epigastrium by cupping; iced gum-water; ice to head.

At 8 p.m. has only vomited twice; skin not so cool; convulsions abated; stomach much easier; much determination to head; stupor. Continue gum-water and cold to head. Warm fomentations to epigastrium.

Aug. 5th, 6 a.m.—Slept well; skin warm; much headache; delirious; pupils dilated; intolerance of light; eyes suffused; pulse small and quick, 120. Took 6 oz. of blood from back of neck by cupping; cold to head, and warm fomentations as far as knees; *Castor oil*.

At 1 p.m.—Has been quiet; less pain; skin comfortable; brain symptoms much better; no stool. Ordered stimulating enema; continue applications.

At 8 p.m.—Drowsy, sleeps much with muttering; no stool. Ordered *Sulphate of Magnesia*.

6th, 8 a.m.—Did not sleep well; intellect confused; dull pain in head; the salts had operated, stool black and offensive; pulse

small and irregular, 112. Ordered twelve leeches to neck; blister between shoulders; continue the *Salts*.

At 2 p.m.—Much better; bowels well opened; intellect clear; pulse 100, regular. At 8 p.m. continues better; skin moist and comfortable; pupils natural; pulse 96. Next day, convalescent.

CASE 2.—Margaret P—, æt. 17, was seized immediately after eating with vomiting and burning pain in stomach, faintness, cool skin, pulse quick and small. Ordered emetic of *Sulphate of Zinc*; 12 oz. of blood from epigastrium by cupping; warm fomentations to epigastrium; iced gum-water.

5th, 7 a.m.—Has had a little sleep during night; much headache; bowels torpid; pulse 80. Ordered *Castor oil*.

6 p.m.—Feels much better; head relieved; bowels well opened, stools black and offensive.

6th.—Convalescent; swelling of face, especially eyelids; joints of fingers much swollen.

CASE 3.—Maria P—, æt. 6. Similar symptoms.

CASE 4.—Margaret W—, æt. 50, was severely attacked after eating with vomiting and purging; burning pain in stomach; constriction across chest; great arterial excitement; pulse slow, feeble, and irregular; difficult and painful urination; stools black and very offensive; burning pain at anus. Ordered warm water emetic; 6 oz. of blood from epigastrium by cups; 12 oz. from the arm; warm fomentations to epigastrium; iced gum-water.

5th, 7 a.m.—Had a little sleep; feels much better; much difficulty and pain in urinating; free discharge of blood from uterus during night, which she says is a return of the menses, though they had ceased for five years; it resembles the menstrual blood in appearance; vertigo and headache.

Ordered *Pulv. rhei* and *Cal. mag.*; fomentations to epigastrium and abdomen.

6th.—Rested well all night; feels much better; less burning on urinating; discharge continues, but in small quantities; head better.

7th.—Convalescent; slight discharge from uterus; swelling of face and joints.

CASE 5.—Louisa R—, æt. 40, was seized about an hour after eating with vomiting and violent retching; faintness; burning pain in stomach; pulse small and quick. She was relieved by an

emetic of *Zinc* with warm water. Warm fomentations to epigastrium; iced gum-water.

5th.—Rested badly; no pain, but great weakness; pulse very small and quick; three black and very offensive stools during the night. Ordered *Castor oil*.

6th.—Feels much better; pulse more natural.

7th.—Convalescent, but has troublesome palpitation.

CASE 6.—Ann R—, æt. 18, was seized directly after eating with vomiting and retching; faintness; burning pain in stomach; pulse small and quick; skin cool; much headache. Ordered 12 oz. of blood from epigastrium; emetic of *Zinc*; iced gum-water; warm fomentations to epigastrium.

5th.—Feels better; bowels torpid. Ordered *Castor oil*.

6th.—Convalescent; with swelling similar to the other cases, and also sore throat.

CASE 7.—Mary R—, æt. 15, had similar symptoms to Case 6; her convalescence was attended by the usual swelling.

CASE 8.—Agnes R—, æt. 12, said the soup had a bitter taste; quickly vomited it, and soon recovered.

CASE 9.—James R—, æt. 8, said the soup tasted bitter.

CASE 10.—Maria, æt. 5, had vomiting and retching immediately after eating the soup.

CASE 11.—Mary H—, æt. 35, was attacked directly after eating with vomiting and painful retching; burning pain in stomach; pulse weak, quick, and irregular. Ordered 6 oz. of blood from epigastrium; emetic; iced gum-water; fomentations to epigastrium.

5th.—Better; bowels torpid.

CASE 12.—Ann H—, æt. 4, was also attacked with retching and vomiting.

Buchmann says, in his work on poisons, that in many cases there are frequent, painful, and difficult urination; swelling of penis; pain in region of bladder; or pain of vagina, and excoriation of labia.

Dr. Ramsay adds that he has often seen the same swelling of the face and joints follow the continued use of *Fowler's Solution*. It was found that *Arsenic* had been placed in the soup.

Reference to paper by Bunsen and Berthold, read before the *Royal Academy of Sciences* at Paris. Also a case by Boulet in *Gaz. Méd. de Paris*.

348. *New Sydenham Society's Publications*, 1857, vol. xxxii, pp. 435-7.

Saikowsky's experiments briefly quoted from Virchow's *Archiv*, vol. xxxiv, p. 73.

Arsenious and *Arsenic acids* were given to animals in small doses, so that they lived from three to six days. The liver was always found considerably enlarged and very fatty; the fat was not diffused throughout the substance of the organ. In each acinus three zones were distinguishable—an external, pale red; a middle, dull yellow; a central zone, of comparatively trifling extent, and appearing as a reddish point. Microscopical examination showed that it was in the middle zone that the cells were enlarged and filled with fat-globules of various sizes. Kidneys were much enlarged, tubuli completely filled with fat-globules, and wherever the epithelium still existed its cells also were full of similar globules. Muscular fibres of heart and of diaphragm had also undergone a fatty change. The epithelial cells lining glands of gastric mucous membrane were often enlarged, and sometimes contained a quantity of fat. All these appearances were most marked after the *Arsenious acid*. When large doses (one and a half to three grains of *Arsenious acid*) were given to rabbits, so as to kill them in twenty to twenty-eight hours, the liver was found fatty, but the fat was diffused throughout substance of organ, so that the change was not so definite as in the more chronic cases.

Grohe and Mosler (Virchow's *Archiv*, vol. xxxiv, p. 208) report the following:—A boy, æt. 2, put into his mouth a piece of *green paint*, about 10 a.m. Within twenty minutes he vomited a very abundant green substance, in which *Arsenic* was detected. He became much collapsed, breathing rapid, pulse small, and not felt distinctly at wrist, abdomen distended. In afternoon, when reaction came on, region of stomach was tender, and pressure was followed by nausea and inclination to vomit; very restless; severe thirst; urine and stool passed involuntarily.

About 7 p.m. the collapse returned; afterwards he slightly improved, but died at 3 a.m., seventeen hours after taking the poison.

Post mortem.—In gastric glands were found changes which coincided perfectly with those observed by Virchow in cases of poisoning by *Phosphorus* (*Archiv fur Path. Anat. u. Phys.*, vol. xxxi, p. 399). The tubes in cortical substance of kidneys were opaque and finely granular, and their epithelial cells could not be isolated. A similar morbid condition existed in liver; the cells in periphery of lobules contained fatty granules, which were present only in small numbers in the cells lying nearer the intralobular veins. Muscular fibres of heart, especially of left ventricle, likewise granular, also soft, so that it was unusually difficult to isolate them. The degree of the granular change varied at different spots, so that every stage of it could be recognised. It was most intense in a patch of hyperæmia and ecchymosis which existed in the septum. At this point the fibres immediately beneath endocardium were completely broken down, and it appeared as if they had ruptured, for blood-corpuscles were observed mixed with the granular matter. In diaphragm there were similar changes, the muscular fibres being found in every stage of degeneration, from the slightest turbidity to complete breaking down of their structure. The fibres which were most altered were decidedly enlarged, being nearly twice their natural diameter. Very slight changes were also found in some fibres of pectoralis major, and adductors of thighs. Maschka's case mentioned, see *Vierteljahrschrift fur. ger. Med.*, N. F., ii, 1865, p. 51.

349. *New Sydenham Society's Publications*, 1869, vol. xliii, pp. 446-8.

Abstract of Kirchgässer's twenty-one cases of poisoning by *Green Wall-pigments*, in *Vierteljahrschrift fur gericht. u. öffent. Med.*, vol. ix, p. 96.

General ill-health, faintness, loss of appetite, depression, irregularity of bowels, coldness of extremities, restless sleep with unpleasant dreams; patient appears as if in a consumption; skin discoloured, and becomes pale or a yellow clay colour, and then, in adults, brownish spots appear on face, and especially on forehead, temples, and cheeks; sometimes urticaria; in one case where there was a tendency to it, ecchymosis; hair of head falls off, but only in severe cases; in one case abnormalities of nails; when there is much feverishness there is absorption of fat, but where there is no pyrexia these deposits are left untouched, or there is even a

tendency to grow fat in parts, as in *Arsenic* eaters ; conjunctival catarrh and affections of eyelids are frequent ; mucous membrane of mouth either pale or red and inflamed, with increased flow of saliva, sometimes containing pus ; not unfrequently chronic inflammation of throat, dryness, tickling, and hawking up of viscid or purulent sputa, occasionally streaked with blood ; sometimes inflammation of pharyngeal mucous membrane, and diphtheritic symptoms, pain in swallowing, heartburn, sense of weight at stomach, eructations of odourless gases, nausea, vomiting ; appetite unaffected, diminished, or entirely lost ; colicky pains and loud rumblings in intestines ; of the abdominal organs liver is most affected, and sometimes there is slight jaundice ; in one case the internal organs underwent fatty degeneration ; kidneys undergo the same pathological change as liver ; painful urination is characteristic, though not always present ; in six cases out of eight examined, *Arsenic* was found in urine ; in one *Arsenic* was found in *fæces* eight weeks after the removal of the patient from the source of poisoning, but not in urine ; the female sexual organs are thrown into sympathetic irritation ; hoarseness and violent cough, most troublesome at night ; irritability and loss of memory, especially for recent events ; melancholy, and faintings, often intermittent, were notable symptoms ; quiverings of muscles, especially those of hands, face, and tongue, were prominent ; sometimes incomplete paralysis of extremities, preferably the lower ones, but the muscles remained susceptible to electricity ; disturbances of sensation usually slight, consisting of formication, numbness of hands and feet, in some cases diminution of sense of touch ; hearing often impaired ; frequent headache of the most varied situation and character ; sometimes so-called muscular rheumatism ; in mild cases no pyrexia, but in severer cases, where more *Arsenic* has been absorbed, there is fever, often intermittent (even though there may have been no exposure to malaria), speedy prostration of strength, and inflammation of different organs. The chief diagnostic signs of this poisoning are—weakness out of all proportions to the local lesions, cachectic appearance, and cold extremities ; brownish discolouration of face ; inflamed eyelids ; disturbances of mobility, especially in lower limbs ; a burning sensation during urination ; intermittent symptoms, and flying rheumatic pains.

M. A. Chevallier's cases in *Annales d'Hygiène*, vol. xxx, pp. 124, 423, referred to.

350. *New Sydenham Society's Publications*, 1865, vol. xxv, pp. 423-30.

Ollivier's case from *Gazette Méd. de Paris*, xviii, p. 704.

A young man inhaled *Arseniuretted hydrogen* during chemical experiments. He began to work at 7.30 a.m.; at 8.30 he had violent headache, which compelled him to open window, but he continued working till 10.30 a.m., when he breakfasted. An hour later headache increased, and pain at epigastrium came on, with vomiting of food. About 2 p.m. he was taken to hospital; face and lips pale, extremities cold, thirst, sense of constriction at the base of chest, intense frontal headache, and severe pain in loins. He took diuretics and a purgative, and at 10 p.m. was bled to 500 *grammes* with great relief. Urine abundant and red, free from blood. Next day still a little headache, but no lumbar pain, dull and slow in answering questions, passed no urine. Next day passed a small quantity of red urine, but on fourth day none. On fifth day much worse, could scarcely answer questions; tongue dry and brown, and protruded with difficulty; face yellowish brown; no urine; died at 6 p.m.

Post mortem.—Stomach contained greenish liquid, similar to that vomited; liver large and congested; spleen soft; kidneys large and congested, especially the tubules, in which the cells were granular and contained a few fatty globules; bladder contained some reddish urine.

Briskén's case abridged from *Caspar's Vierteljahrschrift*, xxv, p. 111.

Arsenic placed in vagina caused abortion, followed by much hæmorrhage. She afterwards had abdominal pains, vomiting, &c., and later cramps, cold sweats, and great depression. She died on eighteenth day after aborting; among later symptoms were delirium, and feeling of constriction in throat.

Maschka's cases in *Präg. Vierteljahrschrift*, 1864, i, p. 68, briefly quoted; loss of power and formication in both upper and lower limbs.

351. *American Journal of Medical Sciences*, 1835, vol. xvii, p. 501.

By Dr. Monod, from *Gaz. Méd. de Paris*, Aug. 22nd, 1835.

A man took $1\frac{1}{2}$ drachms of *White Arsenic*, and in half an hour *Hydrated Peroxide of Iron*. He had no violent colic, and twenty-four hours afterwards was nearly well.

352. *American Journal of Medical Sciences*, 1836, vol. xviii, p. 531.

By Dr. Jacob T. B. Skillmann.

Jane B—, æt. 21, took half an ounce of *Arsenic* April 26th, about twilight: it soon caused emesis and catharsis, which continued frequent during night.

April 27th, 8 a.m.—Pulse 140, and irregular; much pain in head, throat, and stomach; fauces much swollen and red; eyes considerably inflamed; frequent sighing; somewhat reduced and exhausted. Bled to twenty ounces; *Castor oil* and *Epsom salts* in soapsuds.

At 6 p.m. found she had rejected most of what she had taken, and the stool had been very scanty; pulse more frequent; more pain in stomach; continue medicine in smaller doses till bowels acted.

28th, 8 a.m.—Bowels had acted freely; stomach less irritable; more pain in throat, fauces, and stomach. Leeches to throat and stomach.

At 6 p.m. pulse more frequent; ash-coloured appearance of centre of tongue, edges much reddened by inflammation; much pain throughout system, with great and incessant itching of skin; some tenesmus and strangury. Ordered *Tartar emetic* and *Spirit. nit.*

29th, 8 a.m.—Somewhat better in every way; has eaten half a cracker. Dose of *Salts*, and continue *Antimony*.

At 6 p.m.—*Salts* had not operated; worse; continue *Salts* and *Antimony*.

30th, 8 a.m.—All symptoms better; has eaten a cracker; continue *Antimony*.

May 1st, 8 a.m.—Symptoms the same as yesterday; had had a very restless night; bowels acted freely.

2nd, 8 a.m.—Has had a comparatively comfortable night; tongue cleaning.

3rd, 8 a.m.—Still more comfortable; sits up part of day and seems convalescent. Only debility, and soreness of tongue; lower extremities somewhat œdematous; pulse frequent, but soft and elastic.

80th.—Well.

353. *American Journal of Medical Sciences*, 1839, vol. xxvi, p. 497.

Reference to Mackenzie's case in *Lancet*, Spaeth's case quoted from *Journal des Connaissances Méd.-Chir.*, March, 1840, and *Medicinisches Correspondenzblatt*.

A boy, æt. 3 years, took *Scheele's Green*. In half an hour he became pale, his countenance changed; violent vomiting soon came on, with diarrhœa, pain in abdomen, and burning thirst. *Peroxide of Iron* relieved in half an hour, and next day he was well.

354. *London Medical Gazette*, New Series, 1839-40, vol. i, p. 905.

By Mr. Benjamin Phillips.

Six drop doses of *Liquor Arsenicalis* has produced, in my practice, gastro-intestinal disturbance.

355. *Boston Medical and Surgical Journal*, 1836, vol. xiii, p. 334.
By T.

F. A. D—, æt. 23, took at 2 a.m. a powder, which was followed by vomiting in the course of half an hour; soon afterwards several dejections. Vomiting and purging at short intervals continued through the day. The evacuations consisted mostly of a serous fluid and bile. Quantity vomited during the day was reckoned at 6 or 8 quarts. In afternoon, on attempting to walk from one bed to another, he fell down senseless, was convulsed, had cramps in extremities, and was cold. At 7 p.m. he was as follows:—Extremities cold, bathed in sweat; skin blue and corrugated, feeling as if parboiled; no pulse perceptible at wrist; pulsation of carotids rapid and fluttering; eyeballs retracted in orbits; face livid; voice husky and guttural; extreme thirst; distress at epigastrium; frequent vomiting; his whole appearance was much like that of a person affected with malignant cholera.

Treatment had no effect. Cramps and coldness of extremities increased; vision failed; voice faltered; throat became dry; tongue swollen; hiccough; delirious; died next day at 3 a.m. He said he had taken about a teaspoonful of a yellow powder which he bought as *Calomel* and *Jalap*. He had the same symptoms which two others had who confessed that they had taken *Arsenic*, and whose bodies were examined after death.

356. *Boston Medical and Surgical Journal*, 1830, vol. ii, p. 748.

Case occurring in Worcester, England. [No reference given to *Journal* from whence copied.—E. W. B.]

A woman took $\frac{1}{2}$ oz. of *Arsenic* in gruel, and died in four hours. Internal surface of ventricular coats was highly vascular, and appeared to have been greatly inflamed.

357. *American Journal of Medical Sciences*, New Series, 1841, vol. ii, p. 513.

By Dr. C. H. Raymond.

Post mortem, after death from *Arsenic*.—Fluid in stomach and small intestines seemed to be a mixture of green bile and blood. Mucous membrane of stomach dark brown, between the colour of mahogany and chocolate. In several spots there were sloughs, and at their edges the mucous membrane was much thickened.

358. *British and Foreign Medico-Chirurgical Review*, 1870, vol. xlv, p. 538.

Reference made to pamphlet on *The Applicability of the Solution of Saccharine Oxide of Iron as an Antidote to Arsenical Poisoning*. By Dr. H. Köbler, Halle, 1869.

359. *Medical Times and Gazette*, 1873, vol. i, pp. 239, 274; 1872, vol. ii, p. 435.

Editorial.

Mary Ann Cotton poisoned three persons with *Arsenic*, the deaths being attributed to typhoid or gastric fever. Another victim, Charles L. Cotton, also died after five or six days' illness, with symptoms like those of his elder brother, viz. pain, vomiting, purging, and eventually collapse. In stomach and first eighteen or twenty inches of small intestine was red, patchy inflammation, the inflamed patches being covered with a thick layer of tough mucus. *Arsenic* was found in bodies of all four. Joseph Natras, æt. 35, one of those whose symptoms had been referred to gastric fever, had retching, with inability to vomit, for rather more than a fortnight before death. His stomach was found intensely inflamed over about three fifths of its surface, a deep red, darker in some places than others, containing bloody mucus. Duodenum highly inflamed, similar to stomach. Rectum inflamed, a bright red for about three inches of its lower part. Intestines contained a little mucus in their upper parts, and in their lower parts a bright-yellow substance.

360. *Medical Times and Gazette*, 1871, vol. i, p. 674.

By Dr. David B. Dalzell.

A man slept in an *Arsenically* papered room. The very first

night he felt much discomfort, his sleep being unrefreshing and disturbed by frightful dreams, and he rose in morning languid and weak, with much nausea and dull headache. Towards evening the symptoms abated considerably. The second night and day following the same symptoms occurred, with morning exacerbation and evening abatement. He now changed his room, and at once steadily recovered. A servant occupied the room, and immediately became affected in the same way. Another said she never could eat any breakfast when she slept there.

361. *Half-Yearly Abstract of the Medical Sciences*, 1871, vol. liii, p. 161.

By M. Blachiz, from *Gazette Hebdomadaire*, No. 8, 1871.

Arsenic causes slight sensation of heat at back of throat and along course of œsophagus, with sharper appetite and more active digestion. Sometimes with the heat there are nausea, diarrhœa, and colic. A rosy colouration of face is often observed. In medium doses it retards, and in poisonous doses accelerates, the pulse. One of the most constant results of *Arsenical* treatment is a very marked diminution in the quantity of urea eliminated; temperature is lowered; urine augmented; sometimes there is slight salivation, more frequently diarrhœa. In some cases there is produced a modification of the pigmentary material marked by brownish spots, which present [? persist, E. W. B.] for a long time. Urticaria and certain forms of eruption, including those of a pustular form, have also been observed; also swelling of eyelids and lachrymation. The liver, in cases of poisoning, undergoes a steatotic change. There is sometimes albuminuria.

362. *Boston Medical and Surgical Journal*, 1886, vol. xiii, p. 135.

By Dr. Robert C. Cumming.

A girl, æt. 14, took eight drops of *Fowler's Solution* three times a day, gradually increasing it to fifteen drops. It caused swelling of facial integuments.

363. *London Medical Gazette*, New Series, 1840—1, vol. ii, p. 739.

Dr. Watson says *Arsenic* causes salivation.

364. *Medico-Chirurgical Review*, 1844, vol. xl, p. 489.

Otto says (*Zeitschrift f. die gesammte Med.*) that *Arsenic* causes lowness and depression of spirits.

365. *American Journal of Medical Sciences*, New Series, 1843, vol. vi, p. 495.

Delsfond's experiments on horses and dogs, *briefly* quoted from *Bulletin de l'Academie Royale de Médecine*. Experiments by Orfila, Flandin, and Danger quoted. The two latter state that the urine is suppressed in *Arsenical* poisoning, while the former denies it. Delsfond says it is diminished, but not suppressed.

Five grammes of *Arsenic* in a litre of water were injected into the stomach of a bitch, which had been without food or drink for fifteen hours, and whose bladder was perfectly emptied, and the œsophagus tied. Death ensued in three hours and a few minutes. The mucous membrane of the bladder was an intense red, and contained one and a half decilitre of yellowish-red urine, in which there was *Arsenic*. These experiments verified an observation of Delsfond, viz. the almost instantaneous production of false membranes, sometimes so compact that they may be removed in one piece, formed like a hollow cylinder, from the internal surface of the small intestines, in horses poisoned by *Arsenic*. This membranous concretion always occurs in less than two hours.

366. *American Journal of Medical Sciences*, New Series, 1843, vol. vi, p. 520.

By Dr. A. B. Shipman.

In 1838 a lunatic took a teaspoonful of *White Oxide of Arsenic* immediately after a hearty dinner, and washed it down with a draught of water. Within half an hour he vomited freely, and in the course of the day a diarrhœa set in, which lasted a day or two. He then informed his doctor, and expressed his regret and contrition. Within a week or two he was taken with severe pain in legs and arms, which he described as most excruciating, comparing it to the gnawing of rats or the boring of a gimlet into the bones; there was some swelling of legs and feet, but no unnatural heat. After the pain had lasted some days, a partial paralysis of the limbs was observed, which remained obstinate for months. *Strychnia* was finally given him for several weeks; the paralysis gradually left him, and he regained his health.

367. *American Journal of Medical Sciences*, New Series, 1847, vol. xiii, p. 219.

From *Gazette des Tribunaux*, August 9th and 10th, 1845.

A man and wife drank some wine containing *Arsenate of Potash*. In three hours the man had vomiting and general prostration of strength, succeeded by somnolency. In ten or eleven hours the wife had similar symptoms. Some of the wine was given to a dog, which died in four hours with vomiting and convulsions.

[From the subsequent remarks chattering of the teeth *seems* to have been a symptom of the case. The original must be examined.—E. W. B.]

368. *American Journal of Medical Sciences*, New Series, 1847, vol. xiii, p. 492.

By M. Lepage. Quoted from *Bulletin de l'Academie Royale de Médecine*.

At 11 p.m. a man named P. Delamotte took a large cupful of *Arsenic* dissolved in water. He vomited and purged repeatedly during the night.

Next day, at 6 a.m., he had a small irregular pulse; heat over the body; sense of constriction in throat; excessive thirst; horrible pain in stomach and bowels; urine scanty and high coloured; groaning incessantly. *Calcined Magnesia* was given, and he recovered. He probably took fifteen grammes of *Arsenic*.

369. *American Journal of Medical Sciences*, New Series, 1847, vol. xiv, p. 258.

From *Gazette des Tribunaux*, December 2nd, 1846.

A child, two days old, was poisoned by *Arsenic*. It was violently convulsed, and apparently suffering much; it had vomited the night after birth. It soon died. *Arsenic* was found in the body.

370. *American Journal of Medical Sciences*, New Series, 1848, vol. xvi, p. 121.

By Dr. Emory Bissel.

Peter G—, æt. 27, took nearly a scruple of *Arsenic* on the evening of March 4th. Two hours had elapsed when I heard of it, and I sent him thirty grains of *Sulphate of Zinc* to be taken in two doses. When I arrived, a distance of a mile, he had vomited freely twice, but without relief. The family had given him copious draughts of a weak infusion of *Tobacco*, which increased his

sufferings, so that he begged me to kill him if I could not relieve him else. His pulse was 130, small, and wiry. He complained of great constriction and dryness of fauces, but chiefly of a most agonising pain and burning in stomach, "as if it were filled with burning coals." As nearly three hours had elapsed I gave him the *Calcined Magnesia*.

During the hour which I remained with him his symptoms were rapidly becoming more unfavorable. The pulse was 150; the constriction and dryness of fauces extreme; the whole surface bedewed with sweat; the pain and burning in stomach seemed augmented to the highest possible degree, and the right hand was entirely paralysed; in short, everything betokened a speedy death. I left him at 10 p.m. Next morning he was much better, and had been much relieved five or ten minutes after the first dose of *Magnesia*. He complained of nothing except a general weakness, and a sort of faintness at the pit of the stomach. The right hand had recovered its power, and the pulse was 85. In a very few days he resumed his labour on a farm, feeling nothing except a muscular weakness of the legs, which was not very great.

371. *Provincial Medical and Surgical Journal*, 1842, vol. iv p. 119.

From *Oesterr. Med. Wochenschrift*.

Dr. Sigmund, of Vienna, has described a case of poisoning by strawberries, which had been kept for a few hours in a vessel coloured green. Three persons who ate them had nausea and vomiting, with considerable weakness, followed by burning heat at stomach. These symptoms lasted two or three days. *Arsenite of Copper* was found in the green colouring substance.

372. *Provincial Medical and Surgical Journal*, 1842, vol. vi, p. 385.

From *Gazette des Hôpitaux*.

Nine persons who were poisoned by *Arsenic* in food had vomiting, sense of suffocation, and pains in bowels. They recovered.

373. *Provincial Medical and Surgical Journal*, 1842, vol. vi p. 215.

By Dr. William Tomkins.

A man named Card applied a lotion, consisting of half an ounce of *Arsenic* to two quarts of water, to his thighs and scrotum for an eruption thereon. His brother gave evidence at the inquest that he applied the lotion on Tuesday and took two pills. The lotion gave him great pain, but he was not sick after the pills. On Wednesday evening he was very bad, complaining of heat and itching over his thighs. He had no rest the following night, and was in great pain, and continued much the same on Thursday. On Friday he was worse, and had a sort of fit. He applied no more lotion after Saturday evening. He continued to get worse from that time till he died on Wednesday at 2 a.m. On the Monday night preceding his death he was sick, and vomited, and was purged a good deal, and the sickness lasted till he took the medicine for it from Dr. Tomkins, who saw him on Tuesday. He had previously to using the lotion taken a tea of dock leaves and the middle bark of elm, pills, and used an ointment. On the Sunday before his death the scrotum was swollen. The vomiting commenced on Tuesday morning about 3 a.m., soon after taking some oil.

Dr. Tomkins gave evidence that he found the patient in bed and dying; the thighs swollen, especially the left. The scrotum, abdomen, face, and head were also much swollen. His tongue was dry, nearly black, and he had found great difficulty in swallowing. He was delirious, and incapable of answering any questions wholly except when roused; his eyes were suffused, and the pulse could not be felt at wrist.

374. *American Journal of Medical Sciences*, New Series, 1851, vol. xxi, p. 91.

By Dr. B. W. Robinson.

November 8th, 1849, at night, I was hurriedly summoned to see Mr. S—. I found him with a countenance evincing great anxiety and distress, surface cold, pulse extinct, breathing somewhat hurried, intense insupportable pain in epigastrium, and sense of sinking at præcordia. Dr. M— had seen the patient about 10 a.m. the same day, and was told he had been ill all the preceding night with nausea, vomiting, thirst, and pain at stomach-pit. These symptoms existed at Dr. M—'s visit; his pulse was rather small and feeble, and he vomited some mucous matters tinged with bile. After *Calomel* and *Opium* had several dark, fetid stools. A few

moments before he expired (which was in less than an hour after I saw him) he was raised to the sitting posture, and on being laid down gasped a few times.

Post mortem in thirty-eight hours.—Left lung collapsed. Stomach, duodenum, and some thirty inches of jejunum, showed very decided marks of inflammation. Larger intestines remarkably contracted and pale. Bladder contracted and empty. Stomach contained thirty to forty ounces of reddish-brown, bloody-looking fluid, with some semi-solid matters. Its inner aspect presented marks of a high degree of inflammation. There were numerous erosions of the villous coat, varying in size, the largest, situated near the cardiac orifice, being seven or eight lines in length by three to five in breadth, in and around which chiefly were patches of white agglutinated particles. A less intense, though very marked, redness pervaded that portion of the intestinal canal which had been removed, in which no erosions or ulcerations were detected. *Arsenic* was found in the body.

375. *American Journal of Medical Sciences*, New Series, 1852, vol. xxiv, p. 553.

From *Journal de Médecine et Chirurgie*, June, 1852.

Two young men took, at 11 p.m., for severe pain in the bowels, attributed to change of weather, some *Tartrate of Soda*, which was afterwards proved to contain an *Arsenical* salt. In about five minutes they were seized with violent cramps of the stomach. At about 5 a.m. their sufferings became so intense that they were obliged to cry out. One soon died, and the other remains in a dangerous state.

376. *American Journal of Medical Sciences*, New Series, 1854, vol. xxvii, p. 538.

From *Gazette des Hôpitaux*, December 31st, 1853; abridged from Chevallier's paper in *Journal de Chimie Médicale*.

A woman put *White Oxide of Arsenic* on the tip of her tongue. Soon followed pain and contracting of throat, so that she could not swallow.

377. *American Journal of Medical Sciences*, New Series, 1860, vol. xl, p. 110.

By Mr. M. Carey Lea.

A man told the writer that he never put up certain shades of green paper without swelling of nose, and often of the whole face. In a recent number of *London Chemical News* a case is related, and it is said that no one could have anything to do with that paper without irritation of the mucous membranes of throat and fauces. See also Graham-Otto's *Lehrbuch*, vol. iii.

378. *Narrative of the Efficacy of Bath Waters in Paralytic Affections.*

Published by the hospital, 1787.

A woman, æt. 26, took *Arsenic*, and had immediately thirst, violent pains in bowels, tremors, and convulsions, so that her death was expected for several days. After six weeks' suffering she was admitted into the hospital in the utmost state of weakness, not being able to walk, and having lost the use of her hands. This state lasted about fifteen months.

Two boys, æt. 9 and 13, ate, for three weeks, bread poisoned with *Arsenic*. The first symptom in them was violent retching and vomiting, with great soreness of stomach and belly, much thirst, and dryness of mouth. In three weeks after beginning the bread, the eldest began to lose the use of his limbs, a weakness and numbness beginning at the fingers and lower extremities and proceeding upwards. The numbed parts were very sore and painful. The younger began to be affected in the same manner in the course of a week. When taken into the hospital, the eldest was just able to walk. The younger was coastive, and was totally unable to support himself.

379. *Provincial Medical and Surgical Journal*, 1843, vol v, p. 91.

By Mr. John Barrett.

The voice in cholera is called by Dr. Barry "the low whine like that of a dog dying from *Arsenic*."

380. *British and Foreign Medico-Chirurgical Review*, 1848, vol. i, p. 279.

By Orfila and Tardieu, from *Annales d'Hygiène Publique*, tom. xxxviii, pp. 390—412 (October No.).

Case of the murder of the Duchess de Praslin, and suicide of her husband.

On evening of August 18th the Duke was seized with vomiting, with very small pulse and great exhaustion. This state continued next day. On 20th Andral saw him. He found him better, his powers having rallied, and his voice became firm. But there was such extreme smallness of pulse that it could hardly be felt, while it was also irregular, and there was icy coldness of the extremities. In evening there was some reaction; the pulse became developed and regular but frequent, and the hands became warmer. On 21st he was removed to prison, and in the evening his pulse again became filiform and his extremities cold. There was great constriction of throat, intense thirst, and meteorism of abdomen. Little or no urine or stools were passed; no vomiting since 19th and 20th. Every symptom aggravated. Tongue and buccal mucous membrane intensely red, and a sense of burning extending from the mouth to anus. Pulse very frequent, sometimes weak, sometimes strong; two stools from enemata, and hardly any urine. From this time he gradually sank, and died on 24th.

Post mortem.—On inner surface of left ventricle were a large number of small hæmorrhagic spots, produced by the effusion of blood beneath the endocardial membrane, some of these penetrating into the fleshy substance of the heart. Within the large curvature of the stomach there were seven large black eschars. They were clearly defined by a yellowish-white border, the mucous membrane surrounding these being softened and of a deep red. The eschars did not involve the whole thickness of the walls of the stomach, and there was no perforation or ulceration. At the upper portion of the duodenum and lower portions of ileum the mucous membrane was found a deep red, inflammatory. Orfila say that such eschars do not result from the local action of the poison, for they appear in animals poisoned by introducing *Arsenic* into the subcutaneous cellular tissue of the thigh. *Arsenic* was found in the body.

On the second day he had frequent syncope, involuntary stools, feeble pulse, and excessive thirst.

381. *British and Foreign Medico-Chirurgical Review*, 1854, vol. xiv, pp. 546—9.

Case quoted from *Annales d'Hygiène*. [Omitted as doubtful.—E. W. B.]

M. Dieu's case in *Annales d'Hygiène*, April 1854, referred to. Dr. Caffé's case quoted. See below.

Case from *Caspar's Vierteljahrschrift*, April, 1854. On February 15th, 1842, E— was seized with pain in stomach, cramps, thirst, and vomiting, and died in evening of 17th. After ten years' interment, *Arsenic* was found in the body.

Case from *Journal de Chimie Médicale*, July, 1854.

An *Arsenical* plaster was applied to a chronic ulcer of the face. The same day he had general indisposition; next day severe headache, vomiting, and purging. After four days of suffering, he died. In the August No. of the same journal a similar case is reported.

382. *British and Foreign Medico-Chirurgical Review*, 1864, vol. xxxiii, p. 532.

Dr. Polli's case from *Annali di Chimica Applicata alla Medicina*, December, 1863.

A boy used *Tartar emetic* ointments for chronic bronchitis, which produced the characteristic pustular eruptions. A linseed-meal poultice was then applied, with a piece of muslin between it and the skin. In time he had symptoms not in accordance with the course of the disease. He had great prostration; pain sometimes in forehead, sometimes in nape of neck; and sense of dryness in fauces. Tongue was foul, lips dry, constant desire to urinate, with itching in urethra, discharge of very pale urine, and slight intermittent delirium. On second day, as he complained much of pain, Dr. Polli looked beneath the poultice, and found all the pustules empty, and exhibiting a little ulcer with a white base, as if a cautery had been applied. (*Tartar emetic* pustules leave black crusts). The muslin was green, and *Arsenic* was found in it in large quantities. On removing the muslin, the *Arsenical* symptoms quickly subsided.

383. *British and Foreign Medico-Chirurgical Review*, 1858, vol. xxii, pp. 518—22.

W. C. Jackson's case quoted. See below.

Dr. Edward Schaefer's case quoted from *Zeitschrift der k. k. Gesellschaft der Aertze zu Wien*, March 8th, 1858.

A girl, æt. 14, took $\frac{1}{2}$ oz. of *Arsenite of Copper*. She was seized with severe symptoms, and in an hour and a half was brought to the hospital. On Dr. Schaefer's arrival, vomiting had set in; the vomit deposited a green sediment. She had sunken eyes, trembling of limbs, great thirst, burning sensation about throat, malaise; spat up mucus streaked with blood; gastric region tender, and touching it gave great

pain; pulse 132. Later, there was pain in calves. Vomiting was encouraged by warm water, and the *Hydrated Oxide of Iron* given, of which the first doses were vomited. After two hours she was no worse. As she had not urinated for four hours and a half, the urine was drawn off. Except headache, no other symptoms occurred on the first day. She gradually improved, and on the fourth day had regained her appetite, but on taking food she had a sensation of pressure in the region of stomach. She was dismissed cured on ninth day.

A woman æt. 35, was under the care of Professor Rzehaczek, for gangrene of left leg [? caused by *Arsenic*.—E. W. B.] She used to eat *Arsenic* every day. In consequence she had frequent vomiting and pain in abdomen. When she had taken *Arsenic* for two years, the vomiting became more frequent, and she wasted. She had a dry, hard, desquamating skin, and a remarkable wasting of the whole subcutaneous cellular tissue. The thigh was amputated on account of the gangrene of the leg; she had left off *Arsenic* eight or ten weeks previously. No *Arsenic* was found in the soft parts or bones of the leg.

384. *London Medical Gazette*, New Series, 1842-43, vol. ii, pp. 196, 238.

By Mr. John E. Erichsen.

Reference made to papers by Girdlestone, Bateman, Thomson, and Biett.

Erichsen's remarks follow:—When *Arsenic* is given in medicinal doses one of the first constitutional symptoms produced by it is an acceleration of the heart's action; this, as Dr. Duffin has remarked, and as I have seen, sometimes becomes quickened after a few days by ten, twenty, or thirty beats per minute, the pulse also becoming hard and somewhat wiry. This acceleration is particularly observable in those of sanguineous or sanguineo-nervous temperament, in whom the heart's action is readily excited by physical exertion or mental emotion. In some cases before, but usually after, this acceleration, there appear evidences of irritation of the mucous membrane of the stomach; there will be more or less thirst; the tongue becomes coated towards centre and root, with red sides and tip; loss of appetite and sense of weight at epigastrium; about the same time there will be heaviness and pricking about the eyelids, with flashes of light before eyes when

closed, and after a time the eyelids become puffed and droop, giving the countenance a peculiarly melancholy and careworn appearance; there will be more or less headache, chiefly over brows and lower part of forehead; this headache is very often one of the first symptoms. There are very commonly confused and horrible dreams, especially in children. Girdlestone has remarked that in some cases the skin assumes a uniform lobster-red colour, that erysipelas comes on, or that phlyetensæ and pustules appear. I have frequently seen that the disease of the skin for which *Arsenic* is given, more particularly if it be chronic eczema, has evinced a decided tendency to increased action, the patches becoming red and irritable. If the *Arsenic* is still continued there results great irritation about the mucous membrane of the stomach and throat; there will be nausea, vomiting, and total loss of appetite; the headache increases in severity; urine high coloured; the countenance, which has become pale and sallow, will assume a remarkably sorrowful and anxious cast; tremors of the limbs come on, with an occasional feeling of faintness, and the foundation of incurable and permanent disease may be laid in the digestive or nervous system. In some cases the first symptom is a degree of thirst and feeling of oppression about epigastrium; in others pricking about eyelids and flashes of light before eyes; in others, and this is very common, headache with disturbed dreams; and usually antecedent to, or coincident with, any one of these symptoms acceleration of pulse.

A young lady took *Fowler's Solution* for psoriasis of the legs to such an extent that it caused excessive derangement of the stomach, followed by a violent neuralgic attack, together with, at a subsequent period, a distressing train of hysterical symptoms, which terminated in a state of dementia, which has now lasted nearly four years.

Arsenic is very badly borne by plethoric or highly sanguine or sanguineo-nervous persons. In these cases the pulse becomes rapidly accelerated; irritation and even subacute inflammation of the gastric mucous membrane supervenes; there is headache, and a sense of tension or weight in forehead, and the skin disease becomes aggravated.

Miss E. B—, æt. 22, took for an eczema of neck and head at first Donovan's solution of *Iodide of Mercury and Arsenic*, and, after an interval, two minims of *Fowler's Solution* twice a day,

Each caused headache and lassitude, with some thirst, and the eruption became more irritable, and spread to the back. The *Fowler's Solution* had been taken for four days when this occurred.

Sophia D—, æt. 23, took for pityriasis two minims of *Fowler's Solution* twice a day, with white precipitate ointment. On third day she had headache, chiefly frontal, thirst, languor, and loss of appetite.

385. *London Medical Gazette*, New Series, 1843-4, vol. ii, p. 187.

By Dr. Edward James Shearman.

I have given dogs and rabbits large doses of *Arsenious acid* in solution and powder, and immediately afterwards large doses of moist *Hydrated Peroxide of Iron*, and then killed them in a short time. The stomachs have shown minute patches of inflammation.

386. *Boston Medical and Surgical Journal*, 1837, vol. xvi, p. 99.

Mr. J. C. Bullock, a chemist of Penzance, Scotland, died with nervous and pulmonic symptoms from inhaling *Arseniuretted Hydrogen*.

387. *London Medical and Surgical Journal*, New Series, 1833, vol. iii, p. 74.

By Dr. Graves.

Arsenic causes sickness of stomach and headache.

388. *London Medical and Surgical Journal*, New Series, 1833, vol. iii, p. 216.

M. Furney, of Coligny, narrates a case very similar in all its symptoms to cholera, which he considers to have been caused by *Arsenic* thrown down a privy and evolving *Arseniuretted Hydrogen*. [No reference given for this case—E. W. B.]

389. *Pharmaceutical Journal*, 2nd Series, 1867, vol. viii, p. 420.

Cases of poisoning at Wrotham by *Arsenic* in flour referred to. No details given.

390. *London Medical and Surgical Journal* (Committee's edition), 1835, vol. vi, p. 418.

By Dr. Stokes.

In several cases where *Arsenic* has been employed in the cure of ague and other diseases, the patients, after their recovery, fell into a bad state of health, became weak, emaciated, and presented remarkable derangement of the digestive organs. Some of these persons sank in the course of a few years, others continued to drag on a miserable existence.

391. *London Medical and Surgical Journal* (Committee's edition), 1835, vol. vi, p. 669.

By Sir B. Brodie.

Arsenic causes pain and tormina in bowels. I know a lady in whom it generally causes a puffy œdema of the face.

392. *London Medical and Surgical Journal* (Committee's edition), 1835, vol. vi, p. 729.

Paper by Miguel and Loubeiren, from *Academie de Médecine*.

White Arsenic caused, in dogs, violent vomiting, copious purging, and dulness. [See original report, as this translation is only an abridgment—E. W. B.]

393. *London Medical and Surgical Journal* (Committee's edition), 1835, vol. vii, p. 358.

By Dr. Graves.

Paralysis often occurs from large doses of *Arsenic*. Orfila found it caused permanent paraplegia in dogs.

394. *London Medical and Surgical Journal* (Committee's edition), 1835, vol. vii, p. 519.

By Dr. Graves.

A girl took *Fowler's Solution* for psoriasis, beginning with three drops three times a day, and increasing first to five, then to seven drops, then she took ten drops three times a day; in a few days she had an attack of shivering, followed by symptoms of feverish excitement and herpes labialis.

Arsenic sometimes causes gastrodynia, nausea, pain or giddiness of head, a feverish state, or general nervous excitement.

395. *Medical Times and Gazette*, 1853, New Series, vol. vi, p. 179.

A child, æt. 6 months, died at Radcliffe, after violent vomiting and purging, from sucking an ornament coloured with *Scheele's Green*. There was inflammation of the stomach and intestines.

396. *Half-Yearly Abstract of the Medical Sciences*, 1845, vol. ii, p. 413.

Reference made to Dr. Bayard's case in *Annales d'Hygiène*, 1845, p. 858.

397. *Provincial Medical and Surgical Journal*, 1844, p. 1.

By Dr. E. J. Shearman.

Four dogs were killed with *Oxide of Arsenic*, ten grains each. I found all the stomachs exhibit the highly injected, diffused red appearance described by Hope, Carswell, and Roupell, in their plates.

I have also given dogs and rabbits large doses of *Arsenious acid* in solution and powder, and immediately afterwards the *Hydrated Peroxide of Iron*, and this killed them in a short time. The stomachs have shown patches of inflammation.

A pupil of mine for a long time breathed *Arseniuretted Hydrogen* in his private experiments, and in the works where he superintended gilding and silvering by galvanism, in which zinc is extensively used. It has brought on a peculiar kind of epilepsy, much like that described by Dr. Christison, which has latterly been gradually increasing, and his intellect, which was once one of the brightest, is now reduced nearly to fatuity.

Reference made to Beck's cases. See below.

398. *Provincial Medical and Surgical Journal*, 1845, p. 453.

By Dr. George Parker May.

April 25th, 1842.—A child æt. 20 months ate, at 4 p.m., a paste for destroying mice, which consisted of *Arsenic*, honey, and flour. He took at once a dose of *Ipec.*, which acted freely. I saw him a few minutes afterwards. The vomited matter consisted principally of slightly yellow mucus with pieces of the paste. The vomiting was encouraged, and he drank copiously of milk. Between the acts of vomiting he seemed lively.

6 p.m.—Has vomited much. Two natural stools. Is now sleeping calmly. Pulse 180; breathing a little hurried.

8 p.m.—The same.

9.30 p.m.—Still sleeping, but seems restless. Skin hot. Pulse 140.

About 10 p.m. some gruel was given him, which he soon rejected. Soon afterwards he got worse; extremities and face became cold; lips livid; eyes sunk, pupils fixed and rather dilated; pulse scarcely perceptible; respiration feeble, accompanied with sighing. After lying for about half an hour in this condition, he died without a struggle at 11.30 p.m.

Post-mortem in twelve hours.—Stomach contained a small quantity of mucus. Two or three very faint vascular patches were detected.

399. *Provincial Medical and Surgical Journal*, 1845, p. 556.

By Mr. William Allison.

December 2nd, 1844, I saw M. J—, a girl æt. 13, who had taken a large teaspoonful of *Arsenic* before 4 p.m., and another similar dose before 5 p.m., each dose in water. She had suffered violent spasmodic pain, "writhing, twisting about, moaning, and making faces," according to the report. I was sent for at 5.30 p.m., and on arriving at the house, three miles distant, I found her vomiting, more free from pain, but had a sensation of burning heat in the throat and stomach, with feeble pulse and cold skin. She recovered under treatment.

400. *Provincial Medical and Surgical Journal*, 1846, p. 5.

By Mr. W. H. Fry.

Some men were poisoned by drinking beer that was brewed in a copper previously used for boiling *Oxide of Arsenic*. In one old man the limbs became œdematous, and all the toe-nails separated.

401. *Provincial Medical and Surgical Journal*, 1846, p. 293.

By Mr. Edward Pye.

Several children died at Runcorn.

Richard P—, æt. 4½, was seen March 16th. He had been sick. On 18th, there was vomiting and purging. On 20th the mother said that he had had pain in stomach and bowels, and was very thirsty on previous afternoon, and died in evening.

Post mortem on April 27th.—Mucous lining round the cardiac and pyloric orifices exceedingly vascular.

Post mortem of James P—, æt. 10 months.—Peritoneal coat of stomach and intestines remarkably white and glistening. Vessels

of brain slightly congested. Internal surface of stomach very vascular, and also the intestines to a less extent. *Arsenic* was found in both bodies.

402. *Medical Times and Gazette*, 1854, New Series, vol. ix, p. 66.

Dr. Caffè's case of poisoning by a *green* salt of *Copper*, from *Journal des Connaissances Médicales*. See original. Also another case reported in *El Heraldo Medico*.

Tschudi has published two letters in *Wiener Medizinische Wochenschrift* on *Arsenic* eating, translated in *Journal de Médecine de Bruxelles*. When the practice is dropped, emaciation generally follows. *Arsenic* eating increases the sexual passion. If horses which have taken *Arsenic* regularly cease it they become thin, lose their freshness, get dull, and in spite of abundant food do not recover their former sleekness. *Arsenic* causes foam at the mouth in horses. (See *Gazette des Hôpitaux*, May 16th, 1854).

403. *Pharmaceutical Journal and Transactions*, 1871, 3rd Series, vol. i, p. 596.

From the *Daily News*.

A farmer named Knowles, near Wisbeach, mixed *Arsenic* with flour. Several persons who partook of it had violent pains and sickness, and one child died.

404. *Pharmaceutical Journal and Transactions*, 1871, 3rd Series, vol. i, pp. 1012, 1022.

By Dr. Calvert.

Several persons living at Linley Hill, near Beverley, were poisoned by *Arsenic*.

Mr. Dunn was suffering from violent vomiting, with pains at stomach, heat and burning at back of throat, headache, great thirst, drowsiness, and general collapse; skin cold and clammy; face pale; pulse small, and scarcely perceptible.

Mrs. Harper, Miss Harper, and a child, had vomited after partaking of tea. The two latter had symptoms similar to those of Mr. Dunn. A servant, Hannah Bromly, was also suffering similarly. Mrs. Harper and the child died; the former had suffered from a great amount of collapse.

Post-mortem of the child.—A thick brownish matter was oozing from the nostrils. Peritoneum highly congested. The contents of

abdomen were congested throughout. Stomach considerably inflamed, and contained a small quantity of stringy mucus. *Arsenic* was detected in it and elsewhere. Mrs. Harper's last vomit contained a large quantity of greenish deposit, which the microscope showed to consist of mucus containing partly digested food, and a few muscular fibres and fat globules. The green tinge was due to bile.

405. *Pharmaceutical Journal and Transactions*, 1848, vol. vii, p. 199.

By Mr. Hetley.

Three adults and eight children were severely affected with vomiting and retching from eating some *green* confectionery ornament. The symptoms appeared within ten minutes.

406. *Pharmaceutical Journal and Transactions*, 1847, vol. vi, p. 136.

Reference to Bussy's paper read before the French Academy of Sciences, May 18th (see *Gazette Médicale de Paris*, May 23rd, 1846).

407. *Pharmaceutical Journal and Transactions*, 1847, vol. vi, p. 343.

A man named Cotton, at Hull, rubbed some red powder, consisting chiefly of *Arsenic*, on a tumour of the wrist and the inflamed parts of the arm. In a day or two the patient had violent vomiting and purging, and excruciating pains in various parts of body, and died.

408. *Pharmaceutical Journal*, 1854, vol. xiii, p. 38; 1849, vol. viii, pp. 42, 349; 1852, vol. xi, p. 84; 1858, vol. xvii, pp. 142, 428, 520; 1861, 2nd Series, vol. ii, p. 343; 1862, vol. iii, p. 391; 1865, vol. vi, p. 615.

Various cases quoted. See above and below.

409. *Pharmaceutical Journal*, 1849, vol. viii, p. 237.

By Dr. H. Letheby.

In *Arsenical* poisoning there is from the first a sensation of heat and pain in throat, stomach, and bowels; then vomiting; then diarrhoea. The ejected matters are commonly dark, and often stained with blood. The pain in stomach and bowels is generally

very violent, and the stage of collapse for the most part occurs late in the attack. When the vital powers are greatly depressed there may be a coldness and lividity of surface, which is confined almost entirely to the hands and feet; but the breath is never cold, and the tongue retains its warmth and redness to the last. The eyes are commonly prominent, glistening, and bloodshot, and the skin around them is often tumid, hot, and extremely sensitive.

Table of differences between the symptoms of Arsenic and Cholera.

<i>Arsenic.</i>	<i>Cholera.</i>
(1) A feeling of faintness; no previous purging.	(1) A feeling of discomfort, not often amounting to pain in bowels, with more or less purging.
(2) Great pain in stomach or bowels.	(2) No particular pains in stomach or bowels.
(3) Vomiting; the vomit being dark and often streaked with blood.	(3) Sudden attack of vomiting and severe purging; the ejected matters being bilious or gruel-like, never bloody.
(4) More intense pain, and a sense of a burning in stomach and bowels; great thirst and excessive purging; stools dark and sometimes bloody.	(4) <i>Now</i> comes the pain in stomach and bowels, and the great thirst.
(5) Skin at first hot, and circulation excited; the extremities may then become cold and livid, but the tongue retains its warmth and redness; the eyes are often bloodshot, and the countenance is never so peculiarly death-like.	(5) The skin has never been flushed or itching, but the whole surface of it has rapidly become cold and livid; the breath has lost its warmth, and the tongue and lips look blue and feel cold. The countenance pinched; the eye glazed and bloodless, and the whole aspect ghastly.

410. *Pharmaceutical Journal and Transactions*, 1850, vol. ix, p. 238.

Extract from the *Morning Herald*, Oct. 9th.

A girl named Ellen R— died from inflammation of the lungs produced by *Arsenical* fumes.

411. *Pharmaceutical Journal and Transactions*, 1850, vol. ix, p. 285.

The household of Mr. Amos, of Witmesham, near Ipswich, seven or eight in number, were seized with nausea and vomiting from *Arsenic* in food. No other symptoms given.

412. *Pharmaceutical Journal and Transactions*, 1852, vol. xi, p. 266.

By Mr. Thornton J. Herapath.

The whites of three eggs, weighing 1624 grains, were mixed with water and 6·5 grains of dissolved *Arsenious acid*. The mixture was evaporated to dryness, comminuted, and given in food to a cat. Having eaten one fifth or one fourth of the powder, it refused the rest; in a short time it exhibited considerable uneasiness, vomited repeatedly, and was soon afterwards attacked with all the symptoms of *Arsenical* poisoning. It lingered on in a state of extreme torment for two or three days, and then died, refusing food to the last.

413. *Pharmaceutical Journal and Transactions*, 1852, vol. xi, pp. 283—333.

Copied from the *Western Times*. Case of Mr. Huggins.

229 sheep were dipped in Biggs' sheep-dipping composition. In two or three days the sheep appeared stiff, and could scarcely walk, they seemed to be paralysed; they were found to be blistered, as if scalded. After a week they would fall down, and were unable to rise; the blisters became worse and broke; abscesses were formed into the bone. Twelve died; these turned black. The ewes lost their teats.

The composition contained 10 per cent. of *Arsenious acid*, 60 per cent. of *Sulphur*, 12 per cent. of *Potash*, and 18 per cent. of fatty matter.

414. *Dublin Quarterly Journal of Medical Science*, 1864, vol. xxxviii, p. 470.

Report of *Transactions of the County and City of Cork Medical and Surgical Society*. Paper by Dr. Cummins.

Reference to various cases, for which see above and below.

CASE 1.—Last spring I was consulted by a gentleman who

had taken, for a scaly eruption of the ear, from three to six drops of *Fowler's Solution* three times a day for two months. The disease rapidly yielded, but there was tingling, itching, and partial desquamation of the hands and feet. The dose was reduced, and continued thus for another month, when I was sent for in consequence of great irritation of the lower extremities and symptoms of inflammation of stomach. To-day, April 18th, he told me that he has never since felt as well, or as equal to active exertion as before.

CASE 2.—April 1st, 4 a.m., I was called to see a man, æt. 40, suffering from vomiting and diarrhœa. He had felt disinclined for supper the previous evening. At 7 p.m. vomiting commenced, and shortly afterwards diarrhœa, both continuing up to the time of my visit. He was then lying on his back, extremely prostrate, cold, pulseless, and thirsty; punch and brandy had failed to stimulate him; pupils dilated; surface of body cold and dark; hands blue and corrugated; countenance pinched and anxious; great tenderness of epigastrium and abdomen generally; tongue white. At 10 a.m. (after treatment) he was much as before, except that he was warmer, and the breathing very short and hurried. Diarrhœa and vomiting, which had ceased during my visit, had returned; the vomit was a reddish brown, and the stools a reddish serum. He soon died. He had been taking about three minims of *Fowler's Solution* three times a day, for a skin disease, for ten or twelve months. There were no premonitory symptoms of *Arsenical* poisoning during this time.

The peculiar silvery whiteness of the tongue mentioned by Begbie [for which see above—E. W. B.] is exceedingly characteristic of the first constitutional influence of *Arsenic*, and is seldom absent; it is soon followed by swelling of the face, redness and itching of the conjunctiva and eyelids, dryness of fauces, and occasionally by the horizontal red line within the lower lid described by Mr. Hunt.

415. *Provincial Medical and Surgical Journal*, 1852, p. 9.

By Mr. J. Skevington.

November 14th I was sent for about 9 a.m. to see Mrs. B—, æt. 53. I found her vomiting violently; she complained of great heat and pain from mouth to stomach; was very faint, and had cold sweats. She said she had taken some tea containing a little

Carbonate of Soda. She said it tasted very peppery, and in about three minutes after the tea she began to vomit. Pulse was about 120, small and irregular. Skin cold and clammy. Purging came on in about a quarter of an hour, with intense pain in abdomen, more particularly on left side. I sent her to bed and applied bottles of hot water; she soon became warm, and afterwards experienced a burning heat of skin; breathing was difficult; eyes were injected with blood, and appeared as if they were leaving the sockets, with intolerance of light; the tongue and fauces in many places had the appearance of having been recently touched with lunar caustic; there was great difficulty in swallowing, violent pain in head, and cramps of the extremities; the vomit was bilious; the anus excoriated; urine scanty and scalding, scarcely passing any for two days; voice was altered, and hoarseness lasted a fortnight.

The servant, aged about 35, had taken some of the tea, and had similar symptoms, though not quite so severe. On third day she had violent pain and swelling of the tongue, lips, and face, lasting several days.

After the urgent symptoms were removed by an emetic of *Ipecac.* and *Hydrated Peroxide of Iron*, they were both very ill with inflammatory fever, but were convalescent in a fortnight. *Arsenic acid* was found in the tea; probably *Arsenious acid* had been introduced into the *Carbonate of Soda*, and had formed *Arseniate of Soda*.

The patient, in the eight or ten ounces of tea she drank, took about half a drachm of *Arsenic*.

416. *London and Edinburgh Monthly Journal of Medical Science*, 1841, vol. i, p. 918.

By Dr. Sallamea. From *Gazette Méd. de Paris*, Sept. 25th, 1841.

Madame X—, æt. 27, took about a gramme of *Arsenic*; the symptoms commenced from half to one hour afterwards. She recovered under treatment; but eighteen days after Dr. S—'s last visit she vomited a green fluid mixed with blood, with sensation of heat at epigastrium, headache, small pulse, constipation, and diminution of urine. *Arsenic* was found in the urine.

417. *London and Edinburgh Monthly Journal of Medical Science*, 1844, vol. iv, p. 396 [misprinted in Index 397.—E. W. B].

By M. Berutti, of Turin. From *Annales de Thérap.*, Feb., 1844, which again is copied from an Italian journal.

Reference made to *Annales de Thérap.*, 1843, pp. 178, 874, 837.

On Jan. 24th, 1843, Berutti gave to two sheep, about four months old, eight grammes of finely powdered *Arsenious Acid*, with an equal quantity of salt, and thirty-two grammes of the *Arsenic* without salt, respectively. In two hours the sheep which had the latter dose appeared dull and indisposed to move, lying down again whenever it was made to walk. Excrement of a pultaceous nature and dark colour was passed. In three hours the belly became tympanitic, it seemed very feeble and indifferent to external impressions, and was unable to keep its legs. It died within four hours. From the moment of taking the poison it passed no urine, nor ate anything, nor gave signs of suffering. The other sheep also passed no urine, and did not eat, nor had any stool. After two or three hours it became dull and feeble, and lay down. In four hours it had tetanic convulsions, and died very rapidly. After death the lungs and right side of heart were loaded with dark fluid blood. In both the urinary bladder was empty and contracted.

418. *Monthly Journal of Medical Science*, 1851, vol. xiii, p. 483.

Reference to paper by M. Barse, in *L'Union Médicale*, Sept. 27th, 1851.

419. *British and Foreign Medico-Chirurgical Review*, 1856, vol. xvii, pp. 509-512.

By Dr. Hartshorne, from *Philadelphia Medical Examiner*, December, 1855:

A woman, æt. about 22, having taken but little food for a week, retired to her room at 9 p.m. March 29th, 1855, and was then heard to be gagging and choking violently. At 9 a.m. next day the same noise was heard. It was ascertained that she had taken poison. Dr. Hersley saw her at 11 a.m., fourteen hours after the first dose, and two hours after the second. She lay in a state of partial cataleptic stupor, occasionally varied with slight muscular spasms. She took an antispasmodic draught. At 1 p.m. violent pain and vomiting suddenly came on. The *Hydrated*

Oxide of Iron was given, with *Morphia*, cupping, and a blister, &c., but the pain and vomiting increased in severity till the afternoon of April 1st. She then seemed so utterly prostrated that no hopes of her recovery were entertained, either by herself or her physicians. She said the first dose of *Arsenic* (which was dry) irritated her throat, and she coughed out part, but retained about a teaspoonful. Next morning she swallowed another half teaspoonful, with the same difficulty. She felt no pain till she began to take freely of drinks. In evening of April 1st the vomiting and pain ceased, and reaction commenced, with extreme feebleness, cool moist skin, temporary cataleptic spasms, inflammatory tenderness of pharynx and whole intestinal canal, going off with tormina, tenesmus, bloody stools, and strangury, followed in a few days by an acne-like eruption on the skin. She was well in three months.

Wooler's case quoted ; see above.

420. *British and Foreign Medico-Chirurgical Review*, 1859, vol. xxiii, pp. 517—520.

Schroff's experiments referred to, in *Zeitschrift der k. k. Gesellschaft der Aertze zu Wien*, January 11th, 1858 ; Schäffer in *Vierteljahrsschrift f. ger. Med.*, July, 1858 ; and Clarus, in *Schmidt's Jahrbücher*, October, 1858.

Whitehead's case quoted ; see above.

421. *Medical Times and Gazette*, 1857, New Series, vol. xiv, p. 56. By Dr. J. Y. Simpson.

Lebert says of the application of *Arsenic* in cancer (*Traité Pratique des Maladies Cancereuses*, p. 646) that at the end of some hours violent pains commence in and all round the part, tumefaction at first, and subsequently an erysipelatous-like inflammation speedily succeed the pains, and it is only towards the end of five, six, or eight days that this inflammation begins to diminish. During all this time the sufferings are sufficiently great to deprive some patients of all rest and sleep, and ten or fifteen days may elapse before these complications disappear.

Sir Benjamin Brodie says (*Lectures on Various Subjects in Pathology and Surgery*, p. 335) that a medical man told him that many patients died from what seemed to be inflammation of bowels from the application of *Arsenic* in cancer.

422. *Lancet*, 1827-8, vol. ii, p. 136.

By Professor Brande.

The symptoms of *Arsenic* are pain and sensation of burning throughout the alimentary canal. This burning sensation throughout the stomach and bowels is followed by vomiting and purging, and generally there is a quantity of bloody mucus thrown off the stomach. Drinks of all kinds are rejected by the stomach, and after a time the person has fainting fits, great thirst, and intense heat of skin; pulse becomes small and irregular, and there are violent palpitations and cramps in different parts of the body, especially in the extremities; cold sweats supervene, and an eruption of red and purple spots upon the skin precedes death. Delirium is not usual. *Post-mortem* appearances are an inflammatory state of stomach, red patches of inflammation being found upon its inner or mucous coat, and if the mucus and coagulable lymph effused is rubbed off, the parts beneath are found intensely red, usually terminating abruptly at a given point. Generally the blood in the large vessels is found to be fluid.

423. *Pharmaceutical Journal and Transactions*, 1857, vol. xvi, p. 532.

In January, 1847, several hundreds at Hong Kong were poisoned by *Arsenic* in bread. [Can the details be obtained?—E. W. B.].

424. *Pharmaceutical Journal and Transactions*, 1858, vol. xvii, p. 42.

By Mr. H. Bell.

Arsenical powder was applied to the skin of a child. It caused excessive irritation of skin, a wound formed, and the child died in great pain.

425. *Pharmaceutical Journal and Transactions*, 1858, vol. xvii, p. 385.

By Dr. Edwards.

John Guy, of Liverpool, gave *Arsenic* to his wife. She immediately perceived it had a sandy taste on the tongue, and very shortly afterwards there was a burning, tickling sensation in throat and swallow. She took hot coffee in large quantities, and soon vomited.

426. *Pharmaceutical Journal and Transactions*, 1858, vol. xvii, p. 436.

Inquest at Shoreham on Mrs. Puttick and her son. Three persons took *Arsenic* in food. It caused great pain, vomiting, and purging, and two died.

427. *Pharmaceutical Journal and Transactions*, 1858, vol. xvii, p. 553.

By Dr. A. S. Taylor.

Halley's case quoted; see above. Reference to Chevallier's paper in *Annales d'Hygiène et de Médecine Légale*, tome xxxviii, 1847, p. 56.

Bouchardat says, in *Annuaire de Thérapeutique*, 1846, p. 209, that the workers in Schweinfurth green (*Aceto-Arsenite of Copper*) are subject to serious disorders of health. They sometimes suffer from a cutaneous eruption, with œdema of face, and boils frequently form in the scrotum. After a time the mucous membrane of nose shows signs of irritation; there is discharge of fluid from nose, with abundant salivation. This is the first stage. In the second stage there are colicky pains, headache, and prostration of strength.

428. *British and Foreign Medico-Chirurgical Review*, 1859, vol. xxiv, p. 527.

Copied from the *American Medical Monthly*, May, 1859.

A woman, æt. 46, was well till about three weeks before her death, when she complained of general indisposition, and a sensation of heat in the "chest" [? stomach.—E. W. B.]. The symptoms advanced, the sense of burning being located at the epigastrium, and vomiting soon setting in. The vomiting always occurred in five to fifteen minutes after food or drink. A second physician now saw her, and found she had symptoms of severe gastritis. He gave *Nitre*, *Dover's powder*, *Ox gall*, and *Quinine*, and a *Blister* to stomach. The vomiting continued; at first it was yellow, but gradually became green, and towards the close of the case became dark, bordering on brown, and containing spots of blood and a thick ropy mucus, which could be lifted out of the vessel on a stick. Whatever she swallowed she vomited, yet she craved for drink, and took a variety of fluids. During the last week of her life there were nervous symptoms. Extre-

mities were cold, though the face was flushed ; there was a hesitation in answering questions ; partial anæsthesia of hands, slight impairment of voluntary motive power, and convulsive tossings of arms. Languid and anxious expression of face, with a peculiar sharpness of eye. Legs and feet œdematous, lips swollen ; urine scanty, high coloured, and irritating to urethra. No diarrhœa till thirty hours before death, the stools being then dark and offensive. The breathing, which had been before hurried, became laboured ; stupor, interrupted but once by a wild scream, set in ; and the scene closed with complete collapse. *Opium* and brandy were given on the last day (probably three ounces of *Laudanum* and one pint of brandy).

Post mortem after a year.—Body remarkably preserved, also all the viscera, except brain ; the muscles retained their redness. Mucous membrane of stomach hard, much harder than natural, and its veins large, as if congested. Contents of stomach unusually small, and like coffee grounds. Parts of colon and rectum slightly reddened. *Arsenic* was found in body.

429. *British and Foreign Medico-Chirurgical Review*, 1859, vol. xxvi, p. 528.

From *Toronto Weekly Globe*. [See another account in No. 183 of *Path. Record*.—E. W. B.]

Dr. King poisoned his wife. On October 18th, 1858, she was seized with violent internal pains, burning sensation in throat, retching, &c., which lasted till November 3rd, when she died.

Post mortem.—Stomach engorged, in an early state of inflammation. Intestines and rectum coloured. Entire surface of peritonœum dark. Lower part of right lung slightly congested ; liver hard. She had often taken a white powder, which she said was "fiery tasted." It caused vomiting of dark, greenish matter. The severe pains was only felt during the vomiting. *Arsenic* was found in the body.

430. *American Journal of Medical Sciences*, 1832, vol. xi, p. 545.

By Dr. A. A. Gould. From *Medical Magazine*, November, 1832.

C. G—, æt. 23, took half an ounce of *Arsenic* in water about

7 a.m. He had taken no food the day before. In about half an hour he began to vomit, and continued to do so for some time. About 10 a.m. he appeared in a lethargic state; eyes closed; would answer no questions and obstinately resisted all attempts to give medicine or drinks. Watery discharges, yellowish and slightly mixed with fæcal matter, were constantly occurring, involuntarily, or at least without his attending to them. Pulse rapid, small, and feeble. Skin and extremities cold. He shrunk when pressure was made upon abdomen, but gave no other indication of pain. Milk was forced down him, which soon returned, with some of the *Arsenic*. After resisting all attempts to help him he died quietly at 12.30 p.m., the pulse disappearing at the wrist, and the blood settling under the nails at least one hour before death.

Post mortem next day. Stomach contained more than a pint of whitish, turbid fluid, in which floated some flocculent masses, like coagulated milk. He had taken no liquids for one or two hours before death, and none subsequent to vomiting. Two or three small red patches near cardiac end of stomach, such as are generally seen after severe vomiting. The mucous membrane of whole intestinal canal appeared as if it had been macerated for some hours and then thoroughly washed; it contained no fæces.

431. *American Journal of Medical Sciences*, 1832, vol. xi., p. 529.

From *Journal Universel et Hebdom.*, September, 1832. [No name attached.—E. W. B.]

L—, æt. 19, said he was unwell August 8th, 1831. He had diarrhoea and vomiting, In the evening I found him thus:—Countenance calm, cold; eyes sparkling; tongue cold and pale; extremities cold; pulse thready. In twenty minutes more he lost his speech, and died in eleven hours. The median vein was opened, but there was no discharge of blood.

Post mortem in thirty hours.—Ventricles of brain contained about two teaspoonfuls of reddish serum. Beyond the thalami optici, in the two ventricles, there was a softening of that part of the cerebral substance which forms the external parietes of ventricles, most decided in a space of three and a half lines by one in depth. Pericardium contained about a teaspoonful of serum. Heart soft, flabby, could be very easily torn. In right cavities of heart was liquid, livid blood, without fibrinous clots;

in the left cavities the blood was similar, but there were some small fibrinous coagula. The inferior vena cava contained liquid blood, of the colour of wine lees. The internal membrane was slightly reddened (a post-mortem change). Lungs crepitant throughout, but their tissue could be readily torn, especially at posterior portions, where they were filled with a blackish, spumous, and as if purulent liquid. This fluid or blood existed in large quantities in both lungs. Mucous membrane of abdominal viscera presented a very abundant secretion of mucus. It had a yellow tint over most of its surface, but with here and there brown livid patches, especially at the greater curvature of stomach. Mucous membrane of small intestines strongly injected in several spots of three or four inches in extent. Brunner's follicles very numerous, especially towards ileo-cæcal valve and duodenum. Large intestine violently inflamed in several spots, and filled with a large quantity of fluid; its mucous membrane was swollen, and near ileo-cæcal valve it formed a kind of polypus. Bladder contained about two spoonfuls of a turbid and as if purulent fluid; its mucous membrane was highly injected. The tissue of kidneys contained fluid analogous to that in the lungs. Spleen softened, the colour of wine lees, easily torn. Liver large, a little injected. Great sympathetic nerves injected. Everywhere was found the altered black blood so often seen in cholera patients. Urinary secretions had ceased, and bladder only contained a white, milky fluid. *Arsenic* was found in body.

432. *Medico-Chirurgical Review*, 1845, New Series, vol ii, p. 236.

De Lafond's paper *briefly* extracted from *Mémoires de l'Académie Royale de Médecine*, tom. xi, 1845.

In some animals poisoned by *Arsenic* the inflammation of the mucous membrane was so violent that in an hour it produced the formation of several metres of cylindrical false membranes. The urine was greatly diminished.

433. *New York Journal of Medicine*, 1850, New Series, vol. v, p. 268.

Geoghegan's cases quoted; see above.

434. *New York Journal of Medicine*, 1858, Third Series, vol. iv, p. 269.

Reference to paper by Imbert-Gourbeyre in *Gazette Médicale de Paris*, January, 1858. He says *Arsenic* causes paralysis, trembling, pains in limbs, contraction, and convulsions. He relates more than thirty cases proving that it may cause paralysis of movement, or of sensibility in the upper or lower limbs, on one side or on both.

435. *Pharmaceutical Journal and Transactions*, 1861, 2nd Series, vol ii, p. 191.

By Dr. Adam.

Mr. Dodd, of Wrangle, was seized with vomiting, purging, and collapse, and died the same evening in great agony.

Post mortem.—Stomach and intestines highly inflamed. *Arsenic* was detected in the body, and it was found that he had taken one ounce.

436. *Pharmaceutical Journal and Transactions*, 1861, 2nd Series, vol. ii, p. 247.

Three workmen of Messrs. Crum and Thernliebank, of Glasgow, ate some potatoes boiled in a dish which had contained *Arsenic* and *Ohlorate of Potash*. They had violent pain and vomiting.

437. *Pharmaceutical Journal and Transactions*, 1861, 2nd Series, vol. ii, p. 286.

From *Westmoreland Gazette*.

A stream, called Whitbeck, rising in the Blackcombe Mountains, in West Cumberland, contains *Arsenic*. It at first caused in those who drank it soreness of mouth, and affected the throat.

438. *Pharmaceutical Journal and Transactions*, 1861, 2nd Series, vol. ii, p. 385.

Editorial.

Robert Murton and others were seized with vomiting, and great pain and thirst. *Arsenic* was found in the flour they had eaten.

439. *Pharmaceutical Journal and Transactions*, 1861, 2nd Series, vol. ii, p. 485.

Editorial.

M. Bonniss, of France, spread a green *Arsenical* powder over

flowers. In the course of a fortnight it had caused eruptions on face, and a constant taste of copper in mouth, which prevented him taking his customary food, and made him very ill.

440. *Pharmaceutical Journal and Transactions*, 1859, vol. xviii, p. 222.

By Dr. W. Hinds.

Dr. A. Taylor's case, quoted from one of his works. A young man, after having been engaged for nine days in printing with *Arsenical* green, was seized with coryza, swelling of lips and nostrils, and headache. Next day he had severe colic and great muscular weakness.

Dr. Hinds adds that a paper-hanger told him that he had repeatedly got so ill with coryza, dryness of the throat, and prostration, while hanging green paper, that he has been compelled to leave the room. All the hangers of green paper say they often have severe symptoms while at work. In all these cases the symptoms were gastro-enteritic irritation, with intermittent colicky pains, nausea, prostration, loss of muscular power, coryza, heat, and dryness of the throat.

441. *Pharmaceutical Journal and Transactions*, 1859, vol. xviii, p. 244.

Editorial.

Charles Hill, æt. 23, was seized on waking with vomiting and pains in stomach, and died in a few hours. The mucous membrane of the stomach was found highly inflamed. *Arsenic* was found in the body.

442. *Pharmaceutical Journal and Transactions*, 1859, vol. xviii, p. 340.

Editorial.

Poisoning of 200 people at Bradford by *Arsenic* in lozenges. Two are stated to have died with symptoms of cholera. [No further details given here.—E. W. B.]

443. *Pharmaceutical Journal and Transactions*, 1859, vol. xviii, p. 417.

By Dr. A. S. Taylor.

A friend, whose walls were covered with *Arsenical* paper, for

some time suffered from chronic inflammation of eyes, especially affecting conjunctiva of eyelids. On removing the paper, the symptoms disappeared.

Mr. Gay tells me that he habitually used a room papered with *Arsenical* paper. His health became very indifferent. He had colicky pains from time to time, and occasionally they had been very severe. The conjunctivæ of eyes were inflamed and felt uncomfortable. Latterly he had a severe cough, with hoarseness and almost entire loss of voice.

444. *Pharmaceutical Journal and Transactions*, 1859, vol. xviii, p. 524.

Editorial.

Trial at Newcastle for loss of 850 sheep by *Arsenical* wash. Many sheep were ill, foaming at the mouth, shaking their heads, and lying down. The hands and arms of the men which had been in the liquor became sore and mortified and sloughed, and they were ill for some time. The dead sheep were swollen and black. *Arsenic* was found in the bodies.

445. *Pharmaceutical Journal and Transactions*, 1862, 2nd Series, vol. iii, p. 198.

Trial of Delvaux, of Brussels, for poisoning his wife with *Arsenic*, referred to; the only symptoms given are vomiting and pains in stomach.

446. *Pharmaceutical Journal and Transactions*, 1862, 2nd Series, vol. iii, p. 243.

Trial of three persons for the murder of Mrs. Beamish.

Mrs. B— and her family were seized with vomiting after meals; the youngest child had convulsions next day, and died suddenly, The mother also died, having had diarrhœa. *Arsenic* was found in her body.

447. *Pharmaceutical Journal and Transactions*, 1860, 2nd Series, vol. i, p. 482.

Ballenden's cases quoted; see above. Reference made to Blondlot's paper communicated to the *Paris Academy of Sciences*.

448. *Pharmaceutical Journal and Transactions*, 1860, 2nd Series, vol. i, p. 618.

Editorial.

Samuel W—, of Seagrave, died from *Arsenic* in food. He had violent vomiting.

A woman and her child ate the food containing it. They both felt a smarting sensation in mouth, after which they had violent sickness through the night. The woman was very thirsty for several days afterwards.

449. *New Sydenham Society's Publications*, 1878, vol. lix, p. 438; 1871, vol. 1, pp. 189, 62; 1863, vol. xix, pp. 437, 49; 1857, vol. xxxii, p. 484; 1864, vol. xxiii, p. 462; 1860, vol. viii, pp. 434—7, 450—1, 458, 471; 1861, vol. x, pp. 61, 225, 248, 436; 1869, vol. xliii, p. 444; 1865, vol. xxv, p. 27; 1862, vol. xv, pp. 184, 152, 415—6; 1875, vol. lxxv, pp. 484, 455.

Cases by Reese, &c., quoted; see above and below: also reference to Guy in *Fifth Report of the Medical Officer of the Privy Council—Appendix*; Virchow in *Archiv*, xlvii, p. 524; Huber in *Oesterreichische Zeitschrift für practische Heilkunde*, 4, 28; Schaeffer in *Caspar's Vierteljahrschrift*, 14, 1; Orfila in *Gazette Hôpitaux*, 1857, No. 189; Grabbacher in *Oesterreichische Zeitschrift*, 4, 45; Haffner in *Deutsche Zeitschrift für die Staats-Arzneikunde*, 11, 2; Prosper de Pietro Santa in *Annales d'Hygiène*, 19 and 20; Trapani in *Gazette Médicale de Paris* and *Ann. de Thérap.*, 1860, p. 168; Bunzen in *Hosp. Tidende*, 185, Nos. 17, 19, and *Schmidt's Jahrbuch.*, vol. 106, p. 80; Clemens in *Deutsche Klinik*, 1859, 10-2, and *Canst. Jahrb.*, vol. iii, p. 293; Niemann's *Medico-Legal Autopsies*, 3rd hundred, in *Henke*, vol. xxxix, part 3, cases 93-100; Hoffman in *Henke*, vol. xxxix, p. 286; Moutard, Martin, and Sistach in *Annales de Thérap.*, 1862, p. 110; Roussin in *Annales d'Hygiène*, vol. xxviii, p. 179; in *Recueil de Mém. de Méd. Milit.*, 8 ser., 9, p. 136; and in *Schmidt's Jahrbuch*, 1864, vol. 121, p. 5 (a rabbit which had taken *Arsenates* for three months without injury, became emaciated on being deprived of them); Schmidt and Sturzwege in *Moleschott's Untersuch.*, and *British and Foreign Med. Chir. Review*, Jan., 1861; Fokker in *Zeitschrift Allgem. Oesterr. Apoteker-verein.*, v. ix, p. 249; Marchi in *Vierteljahrschrift für Gerichtl. Med.*, vol. xviii, p. 162; Zeller in *Württem. Corr. Blatt.*, 82, 1860, and *Schmidt's Jahrbuch.*, vol. 109, p. 44 (case of hemiplegia); and Von Veiel in *Württemb. Corr. Blatt.*, No. 24, 1860, and *Canst.*

vol. v, p. 115 (out of 700 patients who took $\frac{1}{30}$ -grain doses of *Arsenious acid* for skin diseases, he often met with conjunctivitis, dry throat and nose, irritative cough; in one case strangury, and in two salivation).

450. *Northern Journal of Medicine*, 1845, vol. iii, p. 384.
Allison's case quoted. See above.

451. *American Journal of Medical Science*, 1835, vol. xvi, pp. 239, 518.

By Dr. Leger; communicated to the *Society of Practical Medicine of Paris*.

A child, æt. 18 months, took a solution of the *Grey Oxide of Cobalt*, commonly called "fly-poison" (? *Arsenic*, see No. 299 of *Pathogenetic Record*.—E. W. B.), and was immediately seized with violent colic. She lay stiff on her grandmother's lap, complaining of violent pain in belly. Had vomited twice. *Hydrated Tritoxide of Iron* cured her. Reference to experiments by Lesueur, communicated to *Royal Acad. of Med.*, November 4th; and to Boulay in *Journ. Heb. des Prag. des Sci.*, March 14th, 1835.

452. *Provincial Medical and Surgical Journal*, 1849, p. 611.

By Dr. Samuel Radcliffe.

A man took a large dose of *Arsenic* about 5 a.m. I found him about 8.30 a.m. approaching a comatose state, and there had been much vomiting and purging. He died comatose a little before 11 a.m.

453. *Medical Times and Gazette*, 1868, vol. i, p. 376; 1850, new series, vol. i, p. 519; 1851, new series, vol. iii, pp. 294, 576; 1866, vol. ii, pp. 335-6; 1872, vol. ii, p. 208; 1873, vol. ii, p. 234; 1857, new series, vol. xiv, p. 319; 1857, new series, vol. xv, p. 404; 1859, new series, vol. xviii, p. 175; 1860, vol. i, p. 154; 1860, vol. ii, p. 168; 1874, vol. ii, pp. 125, 355; 1875, vol. ii, p. 425; 1873, vol. i, p. 490.

Reference to Dupuy's essay on *Arsenic* furnished to the *Société de Pharmacie*; Gibert's *Emploi Médicale de l'Arsenic dans les Maladies de la Peau*, Paris, 1850; Hoppe Seyler in *Centralblatt*, 1863, 434; Lewison in *Virchow's Archives*, 36, 15; Saikowsky

in *Centralblatt*, 1865, 353, 769; Senfftleben in *Centralblatt*, 1865, 914; Cunze in *Zeitschrift für rationelle Med.*, 28, pt. 1, p. 33; cases of poisoning by sheep-wash and fly-paper at Exeter and Nottingham [for which see local papers about year 1851.—E. W. B.]; Hill's paper on *Arsenical colours*, read before the British Medical Association; poisoning of children at Blackburn by *Arseniate of Soda* [see local papers about year 1873.—E. W. B.]; cases in *Report of North Staffordshire Medical Society*, 1855-6; *Report of the Trial of Madeleine Smith* by A. F. Trovine, Edinburgh, 1857; Wales' paper on *Arsenical Poisoning*, read before the *Belfast Clinical Society*; Blondot's paper, read before the *Paris Academy of Sciences*; F. Müller on *Arsenical papers*, in *Berlin Méd. Zeitung*, No. 24; Dr. George Johnson's lecture before the *National Health Society*; Dr. Guy's report (in 1862) *On Alleged Fatal Cases of Poisoning by Emerald Green, and on the Poisonous Effects of that Substance as used in the Arts*; poisoning by *Arsenic* in sheep's-head broth at Rotherham [see local papers about year 1875.—E. W. B.]; and Vogel's remarks [see above.—E. W. B.].

454. *Braithwaite's Retrospect of Practical Medicine and Surgery*, 1840, vol. i, p. 44; 1840, vol. ii, pp. 237-42; 1841, vol. iv, p. 222; 1844, vol. ix, p. 114; 1858, vol. xxxvi, p. 374; 1858, vol. xxxvii, p. 396; 1848, vol. xviii, p. 97; 1847, vol. xiv, p. 126; 1852, vol. xxv, p. 423; 1850, vol. xx, p. 377; 1846, vol. xiii, p. 42.

Reference to cases by Deville, *Revue Médicale*, May and June, 1839; *Lancet*, 1840, pp. 46-9, 1834-5, vol. i, p. 516; 1838-9, vol. i, pp. 54, 327; *Gazette Médicale*, August 22nd, 1835; *Literary Gazette*, 1835, p. 156 (two cases); *Medical Gazette*, vol. xix, p. 177; *Brit. and Foreign Med.-Ohir. Review*, vol. i, p. 572 (6 cases), and vol. vii, p. 563; pamphlet by Bunsen and Berthold, of Göttingen; Puchell; Orfila in *Bull. de l'Acad. de Méd.*; and other cases quoted elsewhere.

455. *Pharmaceutical Journal and Transactions*, 1860, 2nd Series, vol. i, p. 556.

By Mr. Charles Heisch.

Symptoms of *Arsenic* eaters. They take it fasting in some warm drink, beginning with a piece the size of a pin's head, and increasing to that of a pea. The first dose is always followed by slight symptoms of poisoning, such as burning pain in stomach and

sickness, but not very severe. A sudden cessation of the practice causes sickness, burning pains in stomach, &c., followed by death. Unless they gradually give up the practice, they invariably die suddenly at last.

Mr. —, an *Arsenic* eater, reports that in his case, about an hour after the first dose, there followed slight perspiration with griping pains in bowels, and after three or four hours a loose evacuation; this was followed by a keen appetite, and a feeling of excitement. With the exception of the pain, the same symptoms follow each increase of dose. On leaving it off for two or three days he feels slight languor and loss of appetite. On two occasions he tried to leave it off altogether. The second time, on the third day of the second week after leaving off the dose, he was attacked with faintness, depression of spirits, mental weakness, and a total loss of the little appetite he still had; sleep also entirely left him. On the fourth day he had violent palpitation of heart, accompanied by profuse sweat. Inflammation of the lungs followed, and he was laid up for nine weeks. He thinks that had he not been bled he would most likely have died of apoplexy. The results on both occasions of leaving off the *Arsenic* were precisely the same.

Arsenic eating improves the complexion and general appearance, and the persons seldom look so old as they are.

456. *Medical Times and Gazette*, 1859, New Series, vol. xviii, p. 43.

By Mr. W. B. Kesteven.

A lady for ten or eleven years suffered frequently from very severe attacks of intestinal derangement, which have entirely subsided within the last six months. For the last twelve years, *except the last six months*, her sitting-room has been papered with *Arsenical* green paper.

457. *Medical Times and Gazette*, 1859, New Series, vol xviii, pp. 94, 120.

By Mr. John Gay.

My study, for more than two years, has been papered with a dark green flock paper. From that time the health of myself and some of the inmates of my house became indifferent. A servant who attended to the study was attacked with a severe cough, which evidently had its seat in the trachea and larynx, and has occasionally

been laid up with spasms resembling attacks of colic. She frequently went into the country with the greatest advantage to her health, but on her return her old symptoms came back, and she is now suffering from cough most severely, and is feeble and wan. My own health has suffered very much in the same manner. I have been obliged to go to the country at times, and have returned well, only to be revisited with my household maladies. At times I have been tortured with flying, apparently neuralgic, pains in chest, abdomen, and especially in tips of toes; occasional attacks of colic; inflamed conjunctivæ, which had become chronic; and lastly hoarseness, followed by a severe tracheal cough, from which I am now suffering severely. As I passed most of my evenings in the study, I had the dust from the book-case, &c., analysed, and I found it contained *Aceto-arsenite of Copper* and another *copper* colour. After removing the paper the symptoms gradually declined.

458. *Medical Times and Gazette*, 1859, New Series, vol. xviii, p. 120.

By Dr. Rooke.

A member of my household has been constantly suffering for months, since a green paper was put up in the dining-room, with obscure colicky gastro-intestinal symptoms, not referable to any known cause. *Arsenic* was found in the dust of the room.

459. *Pharmaceutical Journal and Transactions*, 1872, 8rd Series, vol. ii, p. 605.

By Dr. P. A. Simpson.

The Hindoos use *Arsenio* as an aphrodisiac. The collapse which follows taking a large dose resembles that of cholera.

460. *Pharmaceutical Journal and Transactions*, 2nd Series, vol. xi, p. 161.

By Mr. Hamilton.

A man at Waltham was suddenly taken ill after drinking tea, and died. Mr. Hamilton considered the symptoms to be those of English cholera. Twelve more persons suffered in a similar manner. It was found that they all had drunk water from a bucket which had contained *Arsenic*.

461. *Medical Times and Gazette*, 1859, New Series, vol. xviii, p. 169.

By Dr. J. J. Wright.

My library was hung with green *Arsenical* paper. During the time I lived in that house, and never before or since, I had four or five severe attacks of colic. At this time, extending over five or six years, I had frequently had chronic sore throat, and had, with other members of the family, tenderness about margins of eyelids, worse in the morning.

A paper-hanger tells me that he never covers even a small room with *green* paper without suffering, for two or three days afterwards, from symptoms resembling those of a very bad cold: a redness and watering of eyes, *stiffness* and irritation of nose, soreness of lips, and an uncomfortable feeling about throat.

462. *Pharmaceutical Journal and Transactions*, 1864, 2nd Series, vol. v, p. 378.

Editorial.

Miss Huband died from "bilious cholera and syncope." *Arsenic* was found in her body.

463. *Pharmaceutical Journal and Transactions*, 1865, 2nd Series, vol. vi, pp. 181—2.

By Dr. A. S. Taylor.

Reference to the Bradford cases of poisoning; see above.

[More than 200 were poisoned; twelve died from acute poisoning, and five from the chronic effects of *Arsenic*. Are these cases detailed in the Bradford journals or elsewhere?—E. W. B.]

In December, 1857, 340 children at a school at Norwood were poisoned by *Arsenite of Soda* in the food; each child took, on an average, one grain of *Arsenic*. The symptoms were severe pain, vomiting, purging, shivering, and discharge of mucous fluid from nose. Seven had cough of a croupy character; three vomited blood; and one passed blood from bowels. Some had inflammation of stomach; of these six only were under treatment at end of first week, and one did not recover till after second week.

464. *Pharmaceutical Journal and Transactions*, 1873, 3rd Series, vol. iii, p. 75.

From *Western Daily Press*.

Mrs J—, took at least 1000 grains of *Arsenic*. She suffered from intense irritant poisoning, and was in a state of profound collapse.

465. *Pharmaceutical Journal and Transactions*, 1873, 3rd Series, vol. iii, pp. 178, 736; 1874, vol. iv, pp. 176, 745.

Cotton's cases quoted, see above, No. 359; also other cases referred to.

466. *Pharmaceutical Journal and Transactions*, 1873, 3rd Series, vol. iii, p. 475.

Editorial.

A woman took *Arsenic* in her tea. In two hours she had vomiting and purging, and a burning sensation in throat.

467. *Pharmaceutical Journal and Transactions*, 1873, 3rd Series, vol. iii, p. 641.

By Mr. F. J. Barrett.

A correspondent of the *British Medical Journal* says that severe attacks of throat disease, closely resembling diphtheria, at Melbourne, Victoria, &c., have been caused by *Arsenical* wall papers.

468. *Pharmaceutical Journal and Transactions*, 1873, 3rd Series, vol. iii, p. 471.

Abstract of Dr. Donkin's lecture to the *Sunderland Chemists' Association*, November 13th.

Arsenic sometimes causes violent inflammation of stomach and bowels, and so destroys life; on other occasions it causes fatal sinking of the heart's action, or death by syncope; in other cases the patient gradually sinks into a deep sleep, and dies comatose.

In *acute* poisoning by a single large dose the poison most frequently begins to act in from half to one hour, by producing violent inflammation of stomach and bowels. The patient is suddenly seized with faintness, depression, nausea, and sickness, with intense burning pain at pit of stomach, greatly aggravated by pressure; the pain then extends to the whole of abdomen, and violent vomiting and purging ensue, the vomit being brown or turbid, and sometimes streaked with blood. The vomiting is very violent and persistent, and is rendered more intense by swallowing the smallest quantity of any substance or fluid, and is not followed by the slightest relief. The purging is equally persistent and painful, and there is often a discharge of blood. The mouth is parched and

there is intense thirst, with a sensation of burning and constriction in throat. The pulse is exceedingly feeble, frequent, and irregular, often quite imperceptible; collapse is generally, but not always, induced, the skin becoming cold, clammy, and livid. A case of *Arsenical* poisoning may therefore, at first sight, bear a strong resemblance to cholera, *for which, however, it cannot be mistaken on a careful examination*, even although the calves may be cramped. There is much jactitation and restlessness, and the countenance is generally collapsed from an early period and expressive of intense torture, anxiety, or even despair, and the eyes are injected, red, and sparkling. When this group of symptoms has lasted a few hours, convulsive movements of the trunk and extremities often begins, and then delirium, followed by fatal stupor. The mind, however, often remains clear to the last, death taking place calmly, though it may be preceded by an attack of convulsions. In these cases death frequently occurs at the end of twenty four hours, and generally before the end of the third day, though some cases linger a few days more, and become subacute. When it kills by syncope there is a faint and almost imperceptible pulse, cold clammy skin, and laborious breathing, sometimes some degree of stupor, and sometimes convulsions.

In *chronic* cases of poisoning the primary symptoms are constant pains in stomach; nausea, and vomiting, especially after food or drink; griping pains, tenderness and distension over abdomen, and obstinate protracted purging. Tongue is red and dry, and there is urgent thirst. Pulse frequent, small, and feeble. After a few days the secondary symptoms begin as follows: redness and suffusion of eyes and intolerance of light, salivation and ulceration of gums, a discharge from nostrils, cough and expectoration, sometimes bloody, strangury, a peculiar eczematous eruption on the skin, emaciation and great muscular prostration, convulsions, numbness and tingling in fingers and toes, ending often in paralysis, especially of the lower extremities. As the case progresses there are convulsions, numbness, stiffness, tingling and paralysis of the lower extremities (sometimes the upper), and of the lower half of body, generally permanent, and ending fatally.

469. *New Sydenham Society's Publications*, 1875, vol. lxx, p. 188.

Reference to Rathery's paper in *L'Union Médicale*, xvii, 326.

Arsenic causes brownish discolorations and pustules, so-called "*Arsenic* chancres."

470. *New Sydenham Society's Publications*, 1875, vol. lxx, p. 450—2.

Malmsten's case quoted; see *Hygiea*, 1873, and *Nord. Med. Arch.*, 1874; also Henry's translation of it from *London Medical Record*, vol. ii, p. 441 (see below).

Dr. T. Stevenson adds in an editorial note that he has seen progressive paralysis of motion and sensation, beginning at feet and extending upwards till the lower respiratory muscles were affected, from the use of *Arsenious acid*. The patient recovered.

Fleck's paper referred to; see *Zeitschrift f. Biologie*, vol. viii, p. 424, and *Vierteljahrschrift f. Gerichtl. Med.* vol. xviii, p. 391. Reference to Frost's cases of poisoning by *Arseniuretted Hydrogen* in *Vierteljahrschrift f. Gerichtl. Med.* vol. xviii, p. 267.

471. *Medical Times and Gazette*, 1859, New Series, vol. xix, p. 526.

By Dr. S. O. Habershon.

In a case of poisoning by *Arsenic* there was only a sense of soreness in stomach and pain from violent vomiting.

472. *Lancet*, 1826, vol. x, p. 276.

Orfila's experiments, briefly quoted from *Journal de Chimie*, April, 1826.

CASE 1.—From fifty to sixty grains of the *Yellow Sulphuret of Arsenic* being applied to the cellular tissue of the internal part of the thighs of dogs, they had all the symptoms of *Arsenical* poisoning, and died between the fortieth and sixtieth hours.

Post-mortem.—The limb to which the poison had been applied was very red; the inflammation extended even a considerable way in the abdominal parietes; stomach presented some dark violet spots, and several small ulcerations having a brown appearance, all the result of destruction of the mucous membrane. The interior of the ventricle of heart in some cases presented several deep red spots, which principally occupied the *carneæ columnæ*, and penetrated at least one and a half lines into the tissue of the heart.

CASE 2.—The same effects were caused when from sixty to

seventy grains of the same were introduced into the stomach, and the œsophagus tied.

CASE 3.—The native *Orpiment*, from the mines of Jojova, in Hungary, when applied to the cellular tissue of dogs, in the dose of one to two drachms, kills them in two days.

Post-mortem.—Stomach inflamed, and covered with numerous black spots; heart and small intestines presented some signs of inflammation. Lungs a little red.

CASE 4.—*Realgar* caused similar effects.

473. *Lancet*, 1829-30, vol. i, p. 808.

Reference to J. R. Coxe's case in 3rd vol. of *Philadelphia Medical Museum*. [I cannot obtain this volume.—E. W. B.]

474. *Lancet*, 1829-30, vol. i, p. 744.

Report of the *Westminster Medical Society*.

A member said that *Arsenic* produced unusual excitement of the system, and the whole frame felt "wound up after the manner of a musical instrument overstrung." Dr. Stewart said that Professor Chapman, of North America, told him that *Arsenic* was a very powerful aphrodisiac, not only in men and women, but also in insects (flies).

475. *Pharmaceutical Journal and Transactions*, 1875, 3rd Series, vol. v, p. 81.

By Dr. N. P. Hamberg.

From exposure to *Arsenical* wall-paper he felt in the morning a heaviness in head and weariness; he also had an attack of rheumatism in the legs during July, 1873, which still lasted during the first months of 1874, but this latter symptom he considers of doubtful origin.

476. *Pharmaceutical Journal and Transactions*, 1875, 3rd Series, vol. v, pp. 460, 784, 962.

Notice of poisoning of more than fifty people near Calstock, Cornwall, by *Arsenic* in tank-water; also of other cases.

477. *Medical Times and Gazette*, 1860, vol. ii, p. 25.

By M. Claude Bernard.

Corvisart, in his work on *Diseases of the Heart*, relates the case of a girl who took a very large dose of *Arsenic*; symptoms of

poisoning followed, but she recovered, and died several months later of consumption. A large pseudo-membranous cyst was found in the stomach, within which cyst was enclosed a solid mass of *Arsenic*.

478. *The Practitioner*, 1869, vol. ii, p. 303.

Reference to Hutchinson's cases: see above.

479. *Association Medical Journal*, 1855, vol. iii, pp. 1020-1, 1062, 1081.

Reference for *Arsenic* eating to papers by Vogt and Wibmer, and Johnston's *Chemistry of Common Life*, chap. xxiii, vol. ii; to *Chambers' Journal*, December 20th, 1851; to *Gazette des Hôpitaux*, May 16th, 1854; to Tschudi's paper in *Wiener Medicinische Wochenschrift*; to the *Monthly Medical Journal*, February, 1852; to Vogt's *Arzneimittellehre*, and *Medic. Jahrb. des öester. Staates*, 1822.

480. *Lancet*, 1866, vol. i, p. 642.

Further account of Dodd's cases reported above, No. 93 of *Pathogenetic Record*.

Dr. Heath said that on January 4th the servant girl had sore throat, with some swelling of tonsils, and was rather feverish. George B— was dying; he was extremely weak, and had a very rapid pulse. There was a loss of power in the lower extremities. There was a faint rash on the upper part of the chest like that of scarlatina. Throat inflamed, and adhering to uvula and left tonsil was an exudation like that of diphtheria. On January 8th John B— was in bed, complaining of pain in lower limbs, as also loss of power and a feeling of numbness. This illness had come on after vomiting. E. R— was unable to leave her bed from paralysis and weakness for more than five weeks after she left the farm.

481. *Chemist and Druggist*, 1869, vol. x, p. 192.

Reference to Tardieu's paper on *Poisonous Dyes*, read before *Académie Impériale de Médecine*, February 23rd.

482. *Medical Times and Gazette*, 1861, vol. ii, p. 180.

Extract from *The Times*.

A medical student says that the use of tobacco-pipes, containing *Arsenic* in the clay, caused in many sore throats, &c.

483. *Medical Times and Gazette*, 1861, vol. ii, p. 276.

Editorial account of Beamish's case; additional particulars to account as given above, No. 586 of *Pathogenetic Record*.

A *post-mortem* of the two fatal cases showed excoriations of the lining membrane of the mouth, and inflammation of stomach. The newspapers report that the woman had burning in throat and excessive thirst.

484. *Medical Times and Gazette*, 1861, vol. ii, p. 541.

Report of *Royal Medical and Chirurgical Society*.

Dr. Harley injected a grain of common *Arsenic* into the jugular vein of a cat. In three minutes convulsions commenced, and in twenty-five minutes it was dead. [A case of chronic poisoning, with coloured plates, was also given at the meeting.—E. W. B.] In acute poisoning by *Arsenic*, the morbid changes are most marked at the cardiac end of the stomach; in chronic cases, towards the pyloric extremity. The more gradual the poisoning the more the *Arsenic* acts on the intestines, and the less on the stomach.

485. *Lancet*, 1857, vol. i, pp. 360, 193 [misprinted in my "Index" under *Cuprum*.—E. W. B.].

Reference to two cases of *Arsenical* poisoning cured by *Tobacco*, reported by Dr. Eastman in *Silliman's American Journal*, May, 1836. In one case large doses of *Tobacco* caused no nausea, though usually the patient perfectly loathed it. Mr. Hinds' cases quoted.

486. *Lancet*, 1857, vol i, p. 415.

By Mr. James Morss Churchill.

I saw a case of poisoning by swallowing *Arsenic* recover under the free use of new milk. Dr. Armstrong told me that two persons having taken *Arsenic* were cured by large doses of *Laudanum*.

Reference made to Dr. Gordon Smith's *Forensic Medicine*.

487. *Chemist and Druggist*, 1873, vol. xiv, p. 239.

Editorial.

A boy at Hereford complained of feeling sick and ill; he became much worse during the night, and all that could be elicited from him was "Its all the fly-paper." He became delirious, and died in great pain. *Arsenic* was found in the body.

488. *Pharmaceutical Journal and Transactions*, 1866, 2nd Series, vol. vii, p. 38.

Case of poisoning of the Millingtons at Wrexham, referred to.

489. *Pharmaceutical Journal and Transactions*, 1866, 2nd Series, vol. vii, p. 243.

From *Glasgow Morning Journal*.

Mrs. K—, æt. 48, and her daughter, æt. 5, took *White Arsenic* about 9 p.m., the former about a quarter of an ounce. In ten or fifteen minutes the child had pains in stomach, and vomited two or three times. Shortly afterwards the mother was seized with violent spasms, and what she termed cramp in the legs, followed by vomiting lasting many hours, during which time she was very prostrate. At 2 a.m. Dr. Docherty saw them. The child was very ill and the mother (who had taken more) much worse. Nothing would lie on her stomach; she was very weak, and continued to vomit a greenish matter streaked with blood; features pinched, eyes sunken, fingers clenched, nearly pulseless, and betokened great suffering.

490. *Chemist and Druggist*, 1870, vol. xi, p. 217.

Reference to poisoning of the Harrison's at Derby by *Arsenical* washes for the walls of the house.

491. *Lancet*, 1854, vol. i, p. 584; 1880-1, vol. ii, p. 580.

Reference to cases by Guy, in *Ranking's Abstract*, vol. vii, p. 247. Case of Cowfield and twenty others at Nottingham, June 7th, 1848, (no symptoms here given), and Christison in *London Journal of Medicine*, vol. i, p. 792; and Kerr in *Edin. Med. and Surg. Journal*, July, 1831.

492. *Lancet*, 1854, vol. i, pp. 164, 224, 289.

Case of poisoning at Croydon.

Editorial remarks.—Atlee, æt. 40 to 50, his wife, æt. 27, and three children of the ages of 8, 6, and 4 years died. On December 14th the children first had sickness and violent vomiting. The medical certificate was that they all died of typhoid fever. Afterwards *Arsenic* was found in the body of the mother. The children died on the 22nd, 23rd, and 24th, and the mother on the 25th of December.

Dr. Alfred Carpenter's report of the post-mortem of one of the

children. Lower part of jejunum somewhat reddened internally, but no decided trace of inflammation till the middle of the ileum was reached. Here were large patches of inflammation around each cluster of Peyer's glands; they were upon the surface of the bowel most distant from the mesentery. Some of the patches presented, when examined under the microscope, beautiful instances of arterial injection. The glands were much more decidedly raised beneath the surface of the mucous membrane than is natural. These inflamed patches were most abundant near the ileo-colic valve; scarcely any change below that part. Heart pale, firmly contracted, containing only a very small clot in right auricle. Large veins of thorax contained a very small quantity of fluid blood. Scarcely any blood flowed from the cut inferior vena cava. Gall-bladder completely distended with bile. Mesenteric glands slightly enlarged.

Dr. A. S. Taylor's report of the post-mortem of Mrs. Atlee.

Mucous membrane lining stomach frequently reddened. Strong patches of redness, looking like that of inflammation caused by irritant poison, at the largest end near the cardiac orifice. Duodenum and other portions of small intestines showed some patches of inflammatory redness. *Arsenic* was found in body.

493. *Chemist and Druggist*, 1868, vol. ix, p. 649; 1861, vol. ii, p. 35; 1862, vol. iii, p. 21.

Case of Mrs. Landers, of Paisley, poisoned by *Arsenical* ointment applied to abscess of breast; quoted from *Lancet*, 1868, October 3rd (see below), and to experiments by Schmidt and Sturtzwage, and Paul's case (see above).

494. *Lancet*, 1852, vol. ii, p. 299.

By Mr. Thomas Bryant.

Mr. W. C—, æt. 30, took, when drunk, at least two ounces of *Arsenic* about 9.15 p.m., July 11th. I saw him about 9.30 p.m., and soon gave him an emetic of *Ipecacuanha* and *Tartar emetic*. At 11.30 p.m. I saw him again; the emetic had acted immediately, had partly sobered him, and brought up a quantity of dark-brown flaky fluid containing *Arsenic*. He was very drowsy; skin moist; pain on pressure over pit of stomach; tongue foul, but not injected; bowels purged once of a very fluid fetid stool; pulse 100, full and strong. The stomach-pump was now used, barley-water being injected; the fluid withdrawn was more opaque, containing some

brown curdy material and *Arsenic*. Ordered a scruple of *Sulphate of Zinc* every two hours.

July 12th, 8.30 a.m.—Had taken four doses of the *Zinc*; had vomited considerably after each dose, but not continually; the fluid vomited was clear, with brown curdy flakes suspended in it, and containing *Arsenic*. He was bathed in sweat; had slight pain in abdomen, increased on pressure, but at times very severe; but little dryness of throat; tongue foul and slightly injected; purged three times, stools loose and dark; pulse 100, full, but weak; felt “tolerably well.” Ordered *Castor Oil* and *Hydrated Oxide of Iron*. At 9 p.m. nausea, but no vomiting since 11 a.m.; still slight abdominal pain; tongue foul, but very slightly injected; three stools, with pain, very offensive, dark, and one looked bloody; pulse 100, full, and of more power.

13th.—Noon. Had a good night; still pain over abdomen, worse on pressure; tongue the same; two stools; skin moist; pulse 96, full, and of good power; says he is “nearly well.”

14th.—Altogether better; less pain in abdomen; skin moist; tongue cleaner and less injected; no nausea; two stools, loose, very offensive and dark; pulse the same. Ordered *Nitrous ether* and *Hyo.*

15th.—Better, no tenderness of abdomen; tongue cleaner; no stool; pulse 96, natural. Repeat mixture, and take *Castor oil*.

16th.—Four stools, containing scybala and blood; tongue foul, but not injected; skin cool. Repeat *Oil*.

17th.—Two stools, depositing a white powder and containing blood; otherwise much better.

18th.—Stools natural, but loose.

21st.—Well.

495. *Lancet*, 1830—1, vol. ii, p. 75.

Extract from Orfila's *Traité des Exhumations Juridiques*, 1831.

(1.) The body of Celest. Veillet was exhumed fifteen days after burial. The mucous membrane of the root of tongue, pharynx, upper part of larynx and œsophagus, was dark red, and covered with a great number of phlyctenæ.

(2.) F— was exhumed more than a month after burial. The cardia and pylorus (which were covered with ecchymoses) showed distinct traces of inflammation. Internal lining of heart and large vessels was covered with pink spots.

(3.) F— (daughter) was exhumed three months after burial. The mucous membrane of intestinal canal, from œsophagus to rectum, was covered with bright red spots, apparently the result of acute inflammation. Mucous lining of small intestines and cœcum evidently inflamed, and in some parts ulcerated.

(4.) F— (father) was exhumed nine months after burial. In the whole length of intestinal canal, but particularly at the upper portion, the internal surface exhibited numerous red spots, which appeared caused by inflammation.

Arsenic was found in the bodies of all four.

496. *Practitioner*, 1869, vol. iii, p. 70.

By Dr. R. Sisson.

From the number of cases of shingles which I have seen occur during the use of *Arsenic* I conclude that they stand to each other in the relation of cause and effect. I myself suffered from shingles after taking five minims of the solution of *Ohloride of Arsenic* thrice a day for a fortnight. By omitting the *Arsenic*, and taking a saline aperient, the disease at once disappeared.

497. *Chemist and Druggist*, 1862, vol. iii, p. 337.

Editorial.

E. A. A—, a girl, æt. 14, died from sucking artificial flowers. She was suddenly seized with pains and cramps in stomach, and died next morning. Mr. Chandler made a post-mortem, and found ulceration of the coating of stomach. The stomach was dark red. *Arsenite of Copper* was found in the flower.

498. *Chemist and Druggist*, 1863, vol. iv, p. 112.

Editorial.

Mary Ann D— died from *Arsenic*, which was found in her body by Dr. Taylor. There was extensive inflammation through the whole of the inner membrane of stomach, every part was inflamed, and the central portion of membrane was entirely destroyed, so that the greater part of it came away in flakes. There were numerous clots of blood on surface of stomach.

499. *London Medical and Surgical Journal*, 1834, New Series, vol. iv, p. 765.

Carles and Biett show that the most common effects of *Arsenic*

are an increase of heat throughout the whole body, slight burning in throat, extending even to stomach, very remarkable increase of appetite, great thirst, and diarrhoea, increased urine, sweats, and shivers; sometimes constipation.

500. *Chemical News*, 1859, vol. i, p. 108; 1863, vol. viii, p. 307.

From *Edinburgh Review*. [No name given.—E. W. B.]

An *Arsenical* wall-paper gave every one who remained long in the rooms a violent cold. The paper-hanger said it always gave him a bad sore throat and running of the eyes. Piony's case quoted, see above.

501. *Chemical Gazette*, 1842-3, vol. i, pp. 35, 341.

Emsmann's case quoted, see above; Errard's cases quoted from *Gazette Méd. de Paris*, November 5th, 1842 [see above, and examine original, as there are differences in the translations.—E. W. B.]

502. *Chemical Gazette*, 1842-3, vol. i, p. 483.

By M. Schindler (from Gräfe and von Walther's *Journ.*, 26).

After inhaling about half a cubic inch of the *Arseniuretted Hydrogen*, in three hours there was giddiness, heaviness in neighbourhood of kidneys, cold over whole body, shooting pains in knee-joints and cold in extremities, deadness of some parts, vomiting of a yellow-greenish, bitter mucus, secretion of dark red, nearly black urine, intense heat in abdomen, dark colouring of skin, bleaching of hair in the dead parts. Recovered in seven weeks.

503. *Chemical Gazette*, 1848, vol. vi, p. 228-36.

By F. Wöhler and F. Frerichs (from Liebig's *Annalen*, March, 1848, p. 335).

1. Two grammes of a dilute solution of pure *Arsenic acid* were introduced into the stomach of a half-grown rabbit. For two hours it was well; next morning it was dead. A great amount of urine and *feces* had passed; texture of stomach found unaltered, only in some limited spots there was slight injection of vessels; *feces* quite thin in large intestines; mucous membrane a very deep red.

2. Three grammes of the same solution was given to a young dog. At first it kept perfectly quiet, then began to vomit, and threw up some of the acid. It then recovered, and appeared for two hours quite lively, but died in course of night. There was diar-

rhœa. Mucous membrane of stomach slightly reddened only in a few circumscribed places. Small intestines coated with a white mucous stratum, consisting solely of cylindrical epithelium. Large intestine empty, and its mucous membrane deep red.

3. Three grammes of pure *Arseniate of Lime* were given to a full-grown dog. At first it remained quiet, and after two hours showed no distinct symptoms of illness; next morning it was dead. Very liquid fæces had passed off. Stomach contained about twenty grammes of a mucous, faintly-acid liquid, coloured yellow by bile, with numerous strongly-injected spots, and here and there ecchymoses of the size of a lentil. Mucous membrane reddened through the whole intestinal tracts, but nowhere destroyed by inflammation.

504. *Medical Commentaries*, 1791, vol. xv, p. 209.
Sherwen's experiments, quoted.

505. *Memoirs of the Literary and Philosophical Society of Manchester*, 1862, 3rd Series, vol. i, p. 208.

By Dr. H. E. Roscoe.

Reference to Von Tschudi's paper in *Wiener Medicinische Wochenschrift*, October 11th, 1851; Kesteven's papers in *Association Medical Journal*, 1856; Heisch's paper in *Journal of Pharmaceutical Society*, May, 1860; Dr. Schidler's papers in the Grätz newspaper, the *Tages Post*, March 30th, April 8th, 1860; and Dr. Schäfer's paper in *Sitzungs Berichte der Academie d. Wissenschaften*, 1860, band xli, p. 573; and Schallgruber's paper in *Medicinisches Jahrbuch. d. Oestr. Staates*, 1822.

Dr. Holler, of Hartberg, ate a piece of Styrian cheese, which is made with *Arsenic*, and had a slight burning in throat, as from food containing much spices, and afterwards a pleasant warmth in stomach and good appetite. Once this cheese caused vomiting and colic.

Mr. Stern, of Kundorf, says a man took a larger dose than usual, which caused violent gastro-enteritis. [This paper conclusively proves the practice of *Arsenic*-eating.—E. W. B.]

506. *Edinburgh Medical and Surgical Journal*, 1817, vol. xiii, p. 507.

Review, with quotations, of *Remarks on Arsenic, &c.*, by John

Marshall, 8vo., pp. 163, London, 1817. [Examine original, which contains five cases of poisoning in full.—E. W. B.]

507. *London Medical and Surgical Journal*, 1831, vol. vii, p. 52.

By Dr. Ryan. [This is a continuation of No. 90.—E. W. B.]

The symptoms of *Arsenical* poisoning are, in the majority of cases, only burning in stomach and bowels, vomiting and purging, oppressed circulation, excessive debility, and speedy death.

Post-mortem appearances.—In many cases there will be no redness of mucous membrane of gullet, stomach, or intestinal tube, though generally such appearances are present. Black elevated spots on gastro-intestinal mucous surface sometimes appear, and have been held diagnostic, but Andral refutes this latter opinion. There may be, also, softening of mucous coat of stomach, or perforations of the three coats. Black clots of blood in stomach are strong evidence of *Arsenic*. The rectum may be ulcerated, and the rest of intestines healthy. Mucous membrane of windpipe and lungs may also be inflamed, also the inner surface of heart, or there may be absolute inflammation of lungs. Sexual organs are said to be black and congested, and vessels of brain are said to be congested.

508. *Liverpool Medico-Chirurgical Journal*, 1858, vol. ii, pp. 93-7; and vol. iii, pp. 79-83.

By Dr. J. Baker Edwards.

Five children were ill after eating sweatmeats, &c.; three died. The symptoms were vomiting, purging, and gastric pain. *Arsenic* was found in the three bodies; one who recovered passed *Arsenic* in urine three weeks after taking the poison.

Mrs. M. G.—took *Arsenic*. It caused an immediate sensation as of a sandy powder on tongue, and she took a large quantity of coffee to get rid of the taste. She had also a hot tickling sensation in throat, different from that caused by hot liquid or cayenne pepper. She soon vomited very freely. Suffered great gastric irritation for hours.

A man, somewhat addicted to drinking, fell on the floor; it was at first supposed that he was only drunk, but he seemed not to recover the use of his limbs, and was put to bed, from which he never rose, but continued in a state of collapse and almost

insensibility (except that he indicated some pain in stomach) during some thirty-six hours, when he died. The stomach was found highly injected, extremely vascular in patches, here and there amounting to actual ulceration, with emarginate inflammation. *Arsenic* was found in viscera.

509. *Lancet*, 1888-9, vol. i, p. 264.

By Mr. John Snow.

A student who dissected a body injected with *Arsenite of Potash* suffered severely from pain in stomach and bowels, vomiting and purging.

510. *Practitioner*, 1870, vol. iv, pp. 122, 378.

Reference to Köhler's paper in *Berlin. Klin. Wochenschrift*, 1869, Nos. 35, 36.

A man, æt. 18, took about thirty to forty-five grains of *Arsenic*. In an hour there was retching and vomiting, with violent pain in belly, and great thirst; skin cool, pulse 104, breathing 16. *Saccharate of Iron* was given, sour milk having been previously taken; liniment of *Hyoscyamus* and *Chloroform* to abdomen, and lemonade to relieve thirst. Towards evening he improved; copious yellow stools occurred. The urine was acid, containing no *Arsenic*, moderate in quantity. Slept well the same night; next day convalescent.

511. *Practitioner*, 1871, vol. vi, p. 189; vol. vii, p. 178.

Reference to Cleland's paper in *Journal of Cutaneous Medicine*, December, 1870. Lolliot experimented with *Arsenic* on dogs and rabbits, and found that it reduced temperature and diminished the urea in the urine. Dr. Cleland says *Arsenic* causes silvery tongue, plump appearance of face, and red conjunctivæ. Also reference to *Journal de Médecine*, March, 1871.

512. *Medical Times and Gazette*, 1866, vol. i, p. 328.

By Mr. F. H. Warren.

Herapath says that *Arsenic* causes retention of urine; see his evidence in the trial of Mary Ann Ashford at the Devon Lent Assizes. *Arsenic* causes an incessant and most painful desire to urinate, amounting to strangury.

513. *The Chemist*, 1840, vol. i, pp. 55, 91; 1842, vol. iii, pp.

89, 127 ; 1842, vol. iv, pp. 227, 288 ; 1844, vol. v, pp. 186, 516 ; 1845, vol. vi, pp. 176, 239, 88 ; 1847, vol. viii, p. 84.

Reference to various cases given above, also to Batilliet in *Journal de Chimie Médicale*, January, 1840 ; Chatin, in *Gazette des Hôpitaux* (much fluid in pleura in animals killed by *Arsenic*) ; *La Presse*, December 18th, 1843 ; and Otto, in *Gaz. Méd.*, January 14th, 1845.

514. *Medical Times and Gazette*, 1868, vol. ii, p. 722.

By Mr. Hutchinson.

1. A robust man, æt. 67, took five-minim doses of *Liquor Arsenicalis* for sciatica. He is now the subject of herpes zoster, which began a few days ago. He says he had very trifling pain before the rash began to come out. It first appeared behind his right ear. It now covers the right side of the neck, his right shoulder as low down as the spine of the scapula, and the right side of the front of the chest as low as the upper border of the third rib. On the front of the right arm it extends as low as about two inches below the axilla. The vesicles are quite characteristically those of herpes zoster, with some tendency to ulcerate in parts. Looking at the front of his chest the inflammation of the skin stops abruptly at the middle line, but at a distance from this, on the left side, there are a few isolated small patches of vesicles over precisely the same area as is affected on the other side. There are a few isolated vesicles on the left side of the neck, but they are only to be seen when looked for very carefully. The amount of irritation has been much less than usual.

2. A man, æt. 32, took three-minim doses of *Fowler's Solution* for eczema. In fourteen days he had a free eruption of shingles on right side of chest. The *Arsenic* was continued. The shingles went through the usual course, and soon disappeared.

3. A man, æt. 66, took (with other treatment) *Arsenic* for eczema rubrum of the legs. In about a week there was a free eruption of herpes zoster on the right side, in the iliac region, and side of abdomen.

4. A woman, æt. 48, took *Arsenic* six weeks for eczema. At the end of that time herpes zoster appeared on the right side of the chest and went through its usual course.

5. A woman, æt. 44, took, for psoriasis, six minims of *Fowler's*

Solution three times a day from April 9th to June 14th, when it was reduced to three minims. On July 12th, the psoriasis being nearly cured, she had herpes zoster frontalis on right side. It was of no great severity, and disappeared as usual, though the *Arsenic* was continued.

6. A boy, æt. 8, suffering from chronic and complicated skin diseases, took small doses of *Arsenic* from November to March, when he had herpes zoster on left buttock.

7. A girl, æt. 14, suffering from psoriasis of scalp, took *Arsenic* from January 1st to 29th, when she had herpes zoster on right side of trunk.

8. A man, æt. 50, who was taking *Arsenic*, had a curious unsymmetrical eruption arranged just like shingles, but which remained papular, and never showed vesicles. It disappeared in about ten days.

515. *Lancet*, 1861, vol. ii, p. 138.

By Dr. F. G. Julius.

A lady smoked *Arsenious acid* in cigarettes for asthma. The only ill effects were swelling of eyelids, and, when she first commenced, slight pricking pains in stomach. She commenced with a quarter of a grain three or four times daily, and at last increased the dose to rather more than three grains.

516. *Medical Times and Gazette*, 1876, vol. i, p. 121; and 1875, vol. ii, p. 503.

Brief account of Dr. Knapp's remarks on *Arsenic* eating at the last meeting of German physicians and naturalists at Graz, from *Wien. Med. Zeitung*, Sept. 28th, 1875.

The Styrian women sometimes use *Arsenic* to cause abortion. Its prolonged use increases the sexual power in men.

517. *Medical Times and Gazette*, 1876, vol. i, p. 581.

By Dr. Robert Harvey. Abridged from *Indian Medical Gazette*.

In the fatal cases of poisoning by *Arsenic* in India in 1870-2 the chief morbid appearances were in the stomach and bowels. In 150 out of 197 cases the stomach was inflamed or greatly congested; in six it was slightly congested. The degree of inflammation varied from a slight blush of redness to a deep ecchymosis

covering the whole surface of the mucous membrane, and giving it an appearance resembling red velvet or port wine. In a large number of cases the inflammation was more limited, sometimes being confined to three or four spots, most commonly situated about the cardiac end, but in several cases near the pylorus, with or without radiating streaks of congestion following the lines of the rings. In one case the stomach was almost gangrenous, and in another the pylorus was thickened and gangrenous. In ten cases the inflammation led to ulceration. Yellowness of the mucous membrane—the result of partial conversion of the *Arsenic* into *Sulphide*, or of an admixture of bile—was frequently observed, and in several instances the stomach looked as if thickly coated with yellow paint. A green colour not unfrequently replaced the yellow. In other cases the contents of the stomach were of a dark grumous or chocolate colour from extravasated and altered blood. In a few cases the patient dies, often rapidly, in a state of profound collapse or coma, no local lesions being found in stomach or bowels. In one case the only abnormal appearance was slight congestion of the brain and lungs. In another there was no inflammation of mucous membrane of stomach, though *Arsenic* was found in its tissues.

518. *Practitioner*, 1875, vol. xiv, p. 16.

By Dr. W. H. Broadbent.

Arsenical poisoning causes a granular, or, as it is sometimes called, a fatty degeneration of the liver, spleen, and kidneys, and of the heart and muscles generally; we may almost say a universal degeneration of the more important structures of the body, and this sometimes in the course of two or three days.

519. *Practitioner*, 1875, vol. xiv, p. 138.

Reference to experiments by Mayençon and Bergeret; see *La France Médicale*, November 4th, 1874.

520. *Practitioner*, 1875, vol. xv, p. 454; and 1876, vol. xvii, p. 211.

Reference to experiments by Kossel and Gähtgens; see *Centralblatt für d. Med. Wiss.*, No. 32, 1875, and No. 18, 1876.

Arsenical poisoning causes the deposition of fat in the tissues of various organs, and increases the disintegration of the nitro-

genous constituents of the body. In a dog poisoned by *Arsenate of Soda* there was considerable increase of urea. Doses of from one and a half to three grains for ten consecutive days caused excretion of nitrogen to the amount of forty-eight or sixty-eight grains during inanition; in the healthy animal it rose to 110 or 120 grains or more when *Arsenic* was given.

521. *London Medical Record*, 1873, vol. i, p. 7.

Reference to paper on "*Arsenic* in the Air of Rooms," by H. Fleck, in *Zeitschrift für Biologie*, Band. viii, Heft. 3.

522. *Medical Record* (New York), 1869, vol. iii, p. 568.

Extracted from *Lancet*.

Mrs. Landers, of Paisley, applied to an abscess of breast, first a blister, then an *Arsenical* ointment. She had headache, vomiting, and retching, great thirst, and the inflammation increased rapidly, and spread from the breast to the arm. She died in ten days, and *Arsenic* was found in the body.

523. *Medical Record* (New York), 1869, vol. iv, p. 16.

Report of the *New York Pathological Society*.

Dr. Finnell's case.

A woman poisoned herself with *Paris Green* (*Arsenate of Copper*) two days after her accouchement. Shortly after taking it she was seized with distress about the stomach, vomiting, and violent purging. Her physician treated her for puerperal peritonitis for eight days, when she died. The stomach was found intensely reddened throughout. There was a slight redness at lower portion of œsophagus.

524. *Medical Record* (New York), 1869, vol. iv, p. 70.

By Dr. Charles A. Leale.

Reference to a recent case of poisoning by *Paris Green* quoted in the *Herald*. [Examine original.—E. W. B.]

Mrs. K—, æt. 35, took ten cent's worth of the same poison. When I saw her, over an hour afterwards, she was rolling about the floor in intense pain, which she described as burning her throat and bowels; the pain was paroxysmal. She had intense burning of throat and stomach, difficulty of speech, very severe cramps of muscles of abdomen and lower extremities, distension of abdomen, and was covered with a cold clammy sweat.

Sulphate of Zinc and *Ipecac.* were immediately given in warm water, and were at once vomited. Then four raw eggs were given, followed by the *Precipitated Sesquioxide of Iron*.

It was now about two hours since the poison was taken; the abdominal pains continued with great severity, as did also the cramps of the lower extremities, which were as cold and as rigid as in death. Heat was applied and she became relieved. In three hours after taking the poison I gave two ounces of *Castor Oil*. During the next twelve hours she had several stools highly coloured with *Iron*. Convalescence rapidly followed, a slight enteritis only having showed itself, and in ten days she was well.

525. *Medical Times and Gazette*, 1874, vol. ii, p. 667.

Reference to Dr. Czerny's cases of malignant lympho-sarcomata treated by *Arsenic*, reported by Dr. Tholen in *Archiv für Klinische Chirurgie*. In one case the tumours rapidly improved, but the spleen soon began to swell to an enormous size, and the patient became feverish and died in a state of great exhaustion.

526. *Medical Press and Circular*, 1870, vol. ix, p. 167.

By Dr. Edward Lipp. Briefly quoted from *Archiv für Derm. und Syph.*, 1869, iii, p. 362.

Arsenious acid was subcutaneously injected for psoriasis and chronic eczema, in doses of $\frac{1}{10}$ th to $\frac{3}{4}$ th grains. It caused the following symptoms:—Pulse more frequent (greatest frequency 108); temperature raised in one case to 101·85° F.; appetite lessened; thirst increased; diuresis; feeling of constriction of thorax; nervousness; headache; dizziness; nervous cough; tickling in larynx; injection of conjunctivæ. All these, except the increased frequency of pulse, ceased on lessening or stopping the dose for from one to three days.

527. *Lancet*, 1841-2, vol. ii, p. 806; 1861, vol. ii, p. 499; 1849, vol. i, pp. 191, 377; 1850, vol. ii, p. 451; 1851, vol. i, p. 458; 1852, vol. i, p. 85.

Reference to cases of salivation produced by *Arsenio*; see Marcus, *Ephemerides*, 1809; Ferriar, *Medical Hist. and Reflect.*, iii, 306; Furley, in *Lond. Med. Gazette*, 16; and Johnson, in *Med.-Chir. Review*, Jan., 1836; Trousseau and Pidoux, in *Traité de*

Théráp., ii, 148; also other cases, for which see elsewhere: Review of W. J. Cox, *On the Power of Arsenic over Lupus, &c.*

528. *Edinburgh Medical Journal*, 1858, vol. iii, p. 755.

Mouat's case quoted; see above.

529. *Memoirs of the Medical Society of London*, 1789, vol. ii, p. 224.

By Dr. William Falconer.

I have repeatedly known *Arsenic* cause palsy. In one instance it seemed to affect the hands, somewhat like *Lead*, but in two other cases the paralysis was general, beginning with a numbness at the extremities of the fingers.

530. *Memoirs of the Medical Society of London*, 1789, vol. ii, p. 394.

By Dr. John Sherwen.

Experiments with "*Arsenical tartar*" made like the *Tartar emetic* of the London Dispensatory, by boiling a solution of *White Arsenic* with the crystals of *Tartar*, and evaporating till the new product crystallises.

1. I rubbed one grain into the palms at 10 p.m. Next morning there was a very sensible increase of urine.

2. Repeated the experiment on myself and two others; the same result.

3. The above three persons repeated the experiment with two grains each. The same result; and felt some nausea in morning.

4. I took $\frac{1}{8}$ th grain internally. It caused some uneasy sensations in œsophagus, not unlike heartburn; and was very powerfully diuretic.

5. Three persons took the same dose, and proved it to be diuretic.

531. *Memoirs of the Medical Society of London*, 1795, vol. iv, p. 79.

By Mr. William Gaitshall.

Dr. Fowler says he has sometimes found *Arsenic* suppress the urine.

A woman, suffering from cancer, took $\frac{1}{8}$ grain of the *Arsenical Tartar* [for which see preceding No.—E. W. B.];

it caused a most distressing and troublesome nausea, especially after the morning dose.

532. *Medical Times and Gazette*, 1874, vol. i, pp. 75, 294.

Editorial.

A man died from *Arsenic*. There was found an inflamed condition of the whole digestive canal.

Dr. George Harley said that five grains of *Arsenic* were introduced into a wound between a cat's shoulders. The digestive canal was found to be highly congested.

533. *Medical Times and Gazette*, 1874, vol i, p. 52.

By D. E. H.

In May I papered my room (in which I usually pass about two hours in the latter part of each day) with a green *Arsenical* paper. By the end of the month, after having been told for a week or two that I was "looking ill," nasal symptoms set in with great severity, my nose became slightly red and swollen, the mucous membrane irritable, with a constant defluxion, attended by sudden and violent fits of sneezing; my voice became nasal, my eyes felt dim, and my taste and smell entirely disappeared. I had a painful sense of weight in frontal sinuses, and a most sickening sensation as of soddened membrane, alternating with a still more nauseating impression of grease (exactly as if a tallow candle had been blown out) at the back of the fauces. I could not breathe through the nose; indeed, for three months I had no "breath of my nostrils." The mucous membrane at back of throat looked unhealthy; and the urine was scanty and high-coloured. Night intensified all my ailments. From the beginning of June to the end of September I never had a single night of unbroken rest; I lay awake the greater part of the night with my mouth wide open, with a painful, often alarming, sense of impending suffocation. On rising in morning violent sneezing fits would cause the ejection of great quantities of glairy mucus, which would pour from the nose on stooping forwards and making a sudden forced expiration, without, however, restoring the power, even temporarily, of breathing through the nose. All this time I did not feel "ill," though I looked so. Appetite was not impaired, though I could not taste. I continued much in the same state till September 2nd, when my miseries at night seemed

to culminate. I passed a dreadful night from the most profuse discharge of thin fluid from the nose ; I was compelled to sit up in bed the greater part of the night with a handkerchief to my nose. If I removed it for a moment I felt the fluid running down my chin and neck ; if I lay down exhausted, I felt it running down my throat. My tongue on the following morning was literally as white as paper. My next night was still worse, for I then had for the first time in my life all the horrors of spasmodic asthma, which harassed me in short attacks nearly the whole of that night. Three days after this I left home, going first to Malvern ; on the following day my nasal symptoms nearly left me, and from that day I could breathe through my nose. On one previous day in August, being absent from home, on waking in the morning I had the same facility of breathing, losing it again on my return home in the evening. At Malvern I generally had one attack of asthma nightly, lasting from one to two hours, each attack came on after I had slept about three hours, when I woke with a sense of oppression in the chest, which induced cough and expectoration of glairy mucus. I felt I had to get rid of a certain amount, and I did bring up a large quantity, each paroxysm of cough slowly developed the asthmatic fit, when I smoked *Tobacco* or *Datura Tatula*, either of which speedily stopped both cough and asthma, and enabled me to sleep again. After remaining at Malvern for about a week, I went to the seaside near Southsea, but became decidedly worse as regards the asthma, in addition to which I had now for the first time severe dyspepsia ; eating meat especially produced violent asthmatic attacks. On two occasions I believe I should have died if I had not suddenly vomited, thereby being instantly and completely cured for the time. I now felt so ill that I went to London. I then thought that I had been suffering from hay-fever, though all active symptoms of it had then disappeared. I now took *Nux vom.*, *Hydrochloric acid* and *Quinine*. After third dose, for the first time for nearly four months, the sense of smell was restored, and the same evening at dinner I found I could distinguish each article at table by both smell and taste. Next day I returned home ; but the same evening, on entering my room, I was seized with a violent fit of coughing. I never had before either asthma or hay-fever, though living all my life near green fields.

534. *Lancet*, 1849, vol. i, p. 559.

By Dr. Samuel Griffith.

James P—, æt. 12, suffering from lepra or psoriasis, took five minims of *Fowler's Solution* three times a day, beginning December 28th, 1846.

1847, January 6th.—Psoriasis unchanged, but the body is nearly covered with a papular eruption (lichen simplex); the itching is troublesome, especially at night, preventing sleep. Conjunctivæ affected. *Arsenic* continued.

16th.—Lichen has died away, leaving the skin coated with fine scurf. Lepra fading, Submaxillary glands swollen and tender. Complains of weakness of eyes. Conjunctivæ injected. The dose was reduced to four minims.

30th.—The swelling of glands has subsided, the conjunctivæ remaining affected. Lichenous scurf gone.

535. *Medical Times and Gazette*, 1870, vol. ii, p. 94.

By Dr. Arthur Leared.

A lady, æt. 40, took *Arsenic* for gastric derangement. It caused itching of eyes and soreness of soles of feet, with a red rash on their sides.

536. *Medical Times and Gazette*, 1871, vol. i, p. 377.

Brief account of a recent meeting of the Paris Academy of Medicine.

Dr. Gubler said *Arsenic* causes a diminution of carbonic acid exhaled by the lungs, and of urea excreted by the kidneys. In preventing the organism from rapidly wasting away, it permits the reconstruction and storing up of fat; whence an appearance of health and *enbonpoint*. The symptoms of *Arsenicism* resemble, in a measure, those which accompany hemicrania, and especially the facility of respiration which characterises the paroxysms of that disease.

537. *Medical Times and Gazette*, 1872, vol. i, p. 489.

By Dr. G. M. Lowe.

A child, 19 months old, was taken ill and vomited; it died in convulsions, having screamed a good deal before death.

Post-mortem.—Rosy rash on thighs and anus. Lungs emphysematous; right side of heart gorged with thick clotted blood.

Mesenteric glands greatly enlarged and matted together in a mass. Intestines covered with a light-coloured fluid. *Arsenious acid* was found in body.

538. *New York Journal of Medicine*, 1850, New Series, vol. v, pp. 62, 177.

By Dr. V. P. Colton.

(1) In a case of *Arsenical* paralysis now in hospital (first half of 1850) the pain, cramps, and paralysis commenced in fingers of right hand, then in those of left, then in the toes, first of one foot and shortly afterwards in those of the other; the whole gradually extending up the limbs.

(2) Another case of paralysis and cramps from the chronic effects of *Arsenic*, with similar phenomena, occurred here in 1847.

(3) [Apparently same as first.—E. W. B.].—Charles Wilson, æt. 41, was admitted December 1st, 1849. About five months ago he took some *Arsenic*, the primary effects were counteracted by prompt treatment. He felt perfectly well for seven days afterwards; was then attacked at night with a violent cramp in right index finger, successively invading the other fingers, and lastly the thumb, then attacking the other hand in the same manner, and finally the feet, the pain in hands subsiding as the feet became affected; the whole duration of cramp was about thirty minutes, after which he fell into a sound sleep, which lasted till morning; when he woke he felt free from pain, but found on trying to rise that he had lost the use of the affected parts, and was perfectly helpless, and this paralysis has continued unchanged to the present time, accompanied with a feeling of heat and numbness, which invaded the upper extremities from tips of fingers to a point about three inches below the elbow, and the legs from the toes to a point a little below the knee. Has also had lancinating pains in these parts, regularly commencing about 5 p.m. and continuing till midnight.

Now paralysis and nocturnal pains continue as above stated. He can neither feed himself, nor stand alone when placed upon his feet. Has dryness of throat and great thirst. Has had various treatment including *Mercurialization* and *Pot. Iod.* Ordered *Anodynes*, warm baths, good diet.

July 14th.—Has used for a time *Sulphate of Quinine*, *Strychnia*, and electricity. Has slowly and pretty steadily improved.

About Jan. 7th first began to walk, with a shuffling, unsteady gait, soon afterwards could use his hands in feeding himself. Now can walk quite well, grasps the hand with some firmness, but cannot yet button his own clothing. Has had no pain for some time, save on the approach of stormy weather, when peculiar painful sensations are felt in fingers. [*? Mercury*.—E. W. B.]

On Jan. 10th his urine contained $\frac{1}{100000}$ th part of *Arsenic*, but on May 18th all had disappeared.

July 15th.—Discharged relieved.

(4) In 1847 a similar case occurred here [same as Case 2?—E. W. B.]; a middle-aged woman took *Arsenic*, and suffered from paralysis of upper and lower extremities, with excruciating pains in them. In December, 1849, she had nearly recovered.

Reference to Hastings' case in *Braithwaite's Retrospect*, vol. xviii, art. 22:—Partial paralysis of upper and lower extremities, with burning pain in feet, followed a prolonged use of *Liquor Arsenicalis*.

539. *New York Journal of Medicine*, 1856, New Series, vol. xvi, p. 345.

By Dr. James Walsh.

CASE 1.—In 1855, June 10th, Mr. A. B—, æt. 23, having breakfasted at 6 a.m., took at noon 240 grains of *Arsenic*. He then took some melted butter and salt. I saw him within an hour. A drachm of *Zinci Sulph.* caused very free vomiting. *Carbonate of Iron* was given in ounce doses, allowed to act for three minutes and then evacuated by *Zinc*. This was repeated six times, and then *Hydrated Sesquioxide of Iron* was given; after the first dose (eight fluid ounces) a burning pain in stomach, the restless nervousness and pinched face which accompanied the pain disappeared. This was followed by the *Zinc* as before, and repeated again and again. He then took four ounces of the antidote, followed by *Castor Oil*. Was well next day.

CASE 2.—Mr. H. B—, æt. 40, subject to occasional fits of insanity, died from *Arsenic*. He had convulsions, and resisted successfully all attempts to pass anything into his mouth.

Post mortem.—A good deal of inflammation in stomach and rectum; around pylorus was the most vascular portion both of

stomach and duodenum; lungs congested; liver paler and less vascular than in ordinary cases.

He left home at 10 a.m. well, returned at 2 p.m., and died at 6 p.m.

The rest of the cases contain only general symptoms, vomiting, purging, burning, and pain.

Reference to case in *Medical Gazette*, No. 39.

Half a grain will cause burning pain, inflammation, vomiting, redness of conjunctiva, &c.

Boujeau says that a patient took three quarters of a grain of *Arsenite of Soda* in minute doses during twenty-four days, and a month after last dose it was detected in urine.

540. *London Medical Gazette*, New Series, 1845, p. 435.

Extract from Dr. Angelo Barlieri's paper in *Gazetta Medica di Milano*, and *Gazette Méd. de Paris*, May 3rd.

Arsenious Acid was applied to a cancer of penis, and caused swelling of integuments of penis, scrotum, and groin. The febrile reaction was moderate, lasting forty-eight hours.

541. *London Medical Gazette*, 1845, p. 1217.

Report of the *Medical Society of London*.

Mr. Dendy said that the indications to leave off the use of *Arsenic* were very plain; the child complained of pain in the head, which usually drooped on the shoulder.

542. *Medical and Physical Journal*, 1814, vol. xxxii, p. 249.

Extract from Everard Home's paper read before the Royal Society, June 30th.

M. Bertrand's experiments:—1. Gave a dog, nine months old, six grains of *Arsenic* with butter. In half an hour he vomited, with violent efforts, mucus slightly tinged with blood. Charcoal alleviated him.

2. Took himself at 7.30 a.m., fasting, five grains of *Arsenic* powder in half a glassful of a strong mixture of charcoal. At 7.45 a.m. he had painful sensation of heat in epigastric region, with great thirst. Took another half glass of the mixture. At 9.30 the oppressive pain in epigastrium had disappeared, but he felt a similar sensation in the rest of the alimentary canal. Was very thirsty, and drank several cups of infusion of orange flowers.

543. *Medical Circular*, 1859, vol. xv, p. 170.

? Editorial.

At Guy's Hospital *Arsenic* has caused in patients a very peculiar milky or pus-like discoloration, and death of finger nails.

544. *Provincial Medical and Surgical Journal*, 1840, vol. i, p. 432.

? Editorial.

Elizabeth Harlott took *Arsenic*; it caused constant sickness, excruciating pain, and almost intolerable thirst. She died; and stomach and bowels were found very much inflamed.

545. *Provincial Medical and Surgical Journal*, 1842, vol. iii, p. 257.

? Editorial.

Three children and their parents took *Arsenic* in food. The symptoms were violent vomiting, purging, tormina, great prostration of strength, and severe spasms. Two children and the father died.

546. *Medical Times*, 1844, vol. ix, p. 39.

Report of *Medical Society of London*.

This report is given above (No. 43) from *Lancet*, which seems to be the more complete version of the two, the present, however, gives a few additional symptoms, which are here given.

Dr. Bird's case.—Dryness of mouth; skin parchingly hot; tongue covered with white fur at the back, the tip red, with a red line down middle; pulse 100, throbbing, hard, and full. The last stool up to this time was a pitch-like mass, resembling disorganised blood, occasionally passed from the bowels.

In the third case the eruption is here stated to have occurred on the *second* day (not the third), death occurring on third.

Dr. Theophilus Thompson said some patients have stiffness and dryness of eyelids, dryness of fauces, and nausea, in two or three days, from the use of *Arsenic*.

547. *Provincial Medical and Surgical Journal*, 1848, p. 347.

By Dr. Henry T. Castle.

Post mortem in fifty hours.—Under parts of body generally discoloured from cadaveric extravasation; extremities of fingers

pain in hands or feet ; hands remain stiff, so that he cannot grasp anything firmly. Generally much emaciated. *Pot. Iod.* and *Decoct. Cinch.*

10th.—Eruption partly disappeared. Slowly gaining strength.

19th.—Diarrhœa. Walks much better. *Pulv. Cretæ Co.*

21st.—Gains strength daily. Eruption disappeared in a great degree. Galvanism to extremities and down spine.

July 4th.—Numbness in feet still continues, but the other symptoms are gradually disappearing.

Dr. Tunstall said *Arsenic* caused redness of conjunctivæ, with febrile lassitude, constriction of throat, with mucous irritation of stomach. He gave two cases. (1) A young woman took thirty-six minims of *Liquor Potass. Arsenitis* in twelve doses, for lepra. She became thoroughly prostrate with *Arsenical* symptoms, and the conjunctivæ glassy. (2) A young man took the same *Liquor* for lepra, and had lassitude, incapacity for active exertion, a glassiness of conjunctivæ, and very slight cold reproduces the *Arsenical* effects.

550. *Provincial Medical and Surgical Journal*, 1851, p. 490.

By Dr. Alexander H. Patterson.

Mrs. —, æt. 30, took about half an ounce of *Arsenic* about noon, May 26th. Admitted at 1 p.m., in a profuse perspiration, extremities cold, and pulse small and quick. Stomach-pump removed a quantity of clear fluid and white curdy matter, not containing *Arsenic*. Stomach was washed out, and *Hydrated Peroxide of Iron* given. She walked upstairs to bed. During evening vomited several times, and was thirsty; pulse rose but did not increase in quickness. At 10 p.m. pulse full; no pain in abdomen or stomach pit, except under severe pressure.

May 27th.—Has vomited and purged several times during night, and suffered from great thirst. At 9 a.m. looked pale and exhausted; slight pain in lower abdomen; but no other pain even when firmly compressed. At 9.30 a.m. she left the hospital; the pains in bowels rapidly increased, was accompanied with vomiting and purging, and continued till she died at 1.30 p.m.

Post-mortem in twenty hours. Body pallid. Heart large, and both ventricles filled with black, half-coagulated blood. On washing it the carnes columnæ of both ventricles presented an ecchymosed appearance. Lungs much gorged with black blood.

Stomach, on lower external and anterior aspect, presented a few thin ecchymosed spots, about the size of a split-pea each. Great omentum and peritoneal surface of intestines a light pink colour. On opening stomach it looked dark, and its mucous membrane was softened and thickened; in two places, about the size of a sixpence, near the greater curvature, it was abraded. Head of duodenum very dark, and its mucous folds extensively ecchymosed. It and stomach were distended with a light-brown fluid. Rest of intestine was normal, except a patch of redness and ecchymosis near head of cæcum, and a number of white spots of *Arsenic*, each the size of a pin's head, in the folds of mucous membrane of ileum, the surrounding intestine being very vascular. Uterus and brain much congested.

551. *American Journal of Medical Sciences*, 1858, New Series, vol. xxxvi, p. 77.

By Dr. W. C. Jackson.

D. M—, æt. 28, took nearly two ounces of *Arsenic*, in three doses, March 23rd. At 1 p.m., one hour after the first dose, and ten or fifteen minutes after last, his pulse was a little excited. Gave emetic of *Zinci Sulph.* and *Hydrated Oxide of Iron*, &c. At 6 p.m. great irritability of stomach, and he feels a burning sensation in stomach and throat.

March 24th, 7 a.m., feels very well, but has some fulness about head and dim sight; some congestion of capillary circulation about face; pulse 90. At 11 a.m. pulse 88; slight headache; feels weak and sick in stomach. Next day well.

552. *American Journal of Medical Sciences*, 1841, New Series, vol. i, p. 57.

By Dr. Beck.

A woman, æt. 24, took *Arsenic*, probably an ounce, sometime after 10.30 a.m. At 1.30 she was found very ill, and had been vomiting and purging. Soon afterwards I found her lying on the bed, apparently very drowsy, and unable to speak except in unconnected sentences. On being asked what was the matter, she replied, "I don't know what you say," and repeated once or twice, "Oh, I shall die." Eyes were extremely bloodshot; scarcely any pain; appeared rapidly sinking, though sensible when addressed. She swallowed *Magnesia* in water with great

difficulty. Died at 2.30 p.m. There was also extreme faintness. Reference to Smith in *New York Medical and Philosophical Journal*, vol. iii, p. 6; Christison, in *Edinb. Med.-Chir. Trans.*, vol. ii, p. 298; *London Medical and Physical Journal*, vol. xxxiv; Gerard, in *Revue Medicale*; Orfila, in *Archives Generales*; Holland, in *London Medical Gazette*, vol. xv; Wright, in *Lancet*, vol. xvi; Laborde, in *Journal de Médecine*; Gould, in *Boston Medical Magazine*; Coates, in *London Medical Gazette*, vol. xx; Thompson, in *Lancet*, No. 792; Pettigrew, see his life in the *Medical Portrait Gallery*.

553. *Provincial Medical and Surgical Journal*, 1843, vol. v, pp. 380 and 481; vol. vi, p. 161; 1844, vol. vii, p. 248; 1850, p. 291; 1848, pp. 78, 305, 669; 1849, pp. 54, 489; 1851, p. 138. Various cases quoted, see elsewhere.

554. *London Medical Gazette*, New Series, 1838-9, vol. i, p. 620; 1840-41, vol. i, p. 302.

Reference to cases by Thompson and Orfila.

555. *American Journal of Medical Sciences*, 1836, vol. xviii, p. 504; 1835, vol. xvii, pp. 529-38; 1837, vol. xx, p. 222; 1839, vol. xxiv, p. 243; 1830, vol. vi, pp. 523-4; 1839, vol. xxiii, pp. 212, 503; 1837, vol. xxi, p. 519; 1832, vol. xi, p. 528. New Series, 1841, vol. i, p. 529; vol. ii, p. 503; 1842, vol. iii, p. 249; vol. iv, p. 228; 1843, vol. v, p. 196; vol. vi, p. 497; 1861, vol. xli, pp. 290-2; 1862, vol. xliii, p. 279; 1849, vol. xvii, p. 230; 1845, vol. x, pp. 518, 521; 1851, vol. xxii, pp. 262, 535, 259; 1844, vol. vii, pp. 232, 277, 279, 491; vol. viii, p. 533; 1864, vol. xlvii, p. 278; 1869, vol. lvii, p. 463.

Reference to Buzorini in *Lancette Française*, November 17th, 1835; Puckelt, in *Med. Annales*, vol. v, No. 4, and *Gas. Méd. de Paris*, 1840, April 18th; and *Report of Children's Employment Government Commission* (England), 1863; also other cases quoted elsewhere.

556. *Southern Journal of Medicine and Pharmacy*, 1847, vol. ii, p. 353.

Letheby's case quoted, see above.

557. *Charleston Medical Journal and Review*, 1850, vol. v, p. 64.

Hunt's paper from *Trans. of Provincial Med. and Surg. Ass.*, vol. xvi, pt. 2; quoted.

558. *British Medical Journal*, November 4th, 1876, p. 587.

By Dr. H. B. Donkin.

A young woman complained of "queerness and strange feelings in the head." These symptoms, she said, had come on quite suddenly, and had lasted now for about ten days. By further questioning, I learnt that loss of memory of the performance of very recent acts, frequent giddiness, and some drowsiness, were the chief expressions of the "queerness" she alluded to. She felt as if she were "losing her mind." Slight constipation. She told me that her husband was suffering in like manner, but that all his symptoms, especially the giddiness, were rather more marked. She and her husband had been sleeping for the last fortnight in a room hung with a light-green paper. My prescription being altered to an order to sleep there no longer, she returned in a few days almost well, bringing me a sample of the paper, which was found to be arsenicated in a high degree.

559. *British and Foreign Medico-Chirurgical Review*, 1870, vol. xlv, p. 278; 1854, vol. xiii, pp. 294, 575-7; 1855, vol. xv, p. 293; 1861, vol. xxvii, p. 534; 1857, vol. xx, pp. 521-2; 1859, vol. xxiii, p. 525.

Reference to cases quoted elsewhere; also to Schroff in *Journal de Chimie Medicale*, Dec., 1843; Blondlot in ditto, Oct., 1854; Schutte in *Caspar's Vierteljahrschrift*, Oct., 1854; and a paper in *Chemical News*, Nov. 3rd, 1860.

560. *Edinburgh Medical and Surgical Journal*, 1809, vol. v, p. 23.

Reference made by Mr. Hill to *Medical Journal*, vol. i, p. 508, to the case of a young woman who rubbed her head with an *Arsenical* pomatum to destroy vermin. In six days she had excruciating pains all over body, a general millet-seedlike eruption covering the whole surface, violent swelling of head, and with much difficulty she recovered. This case is narrated by a Swiss physician.

561. *British Medical Journal*, 1873, vol. i, p. 494.

Extract from a paper read at the *Bombay Medical and Physical Society*, February 1st, 1873.

An officer wore socks in which *Arsenious acid* was found. They caused an eczematous eruption on the legs, a chain of vesicles following the course of the absorbents on the inside of one thigh.

562. *New England Journal of Medicine and Surgery*, 1819, vol. viii, p. 298.

From *Phylo. Mag.* [No name given.]

Mr. R— took last evening a considerable quantity of *Arseniate of Potash*. Found him with a quick pulse, considerable prostration of strength, sense of heat over whole body, pricking in limbs, disagreeable dry sensation in throat, and some degree of anxiety. Took *Sulphate of Zinc*, *Charcoal*, and *Castor Oil*. Next morning much better, but tongue swollen and pale, but lively at the margin.

563. *New England Journal of Medicine and Surgery*, 1820, vol. ix, p. 240.

By Dr. Benjamin Page.

Mrs. G— drank some tea containing *Arsenic* on evening of May 13th. In fifteen minutes after the last cup I found her complaining of a burning sensation in stomach, griping pain in bowels, trembling and numbness of limbs, dizziness and confusion of head, tingling pain in eyes and face, dryness of tongue and fauces, sudden flushes of heat; she had also had one stool. Gave *Ipec.*, *Sulphate of Copper*, *Ant. Tart.*, and *Sulphate of Zinc*, and warm drinks.

14th.—Symptoms unchanged, except a little abatement of burning in stomach; pulse quick and irregular; lancinating pains in head and breasts; dysuria and tenesmus.

15th. Quiet night, but without much sleep; had a rigor this morning and another in evening; head hot; tongue thickly coated white; heat, soreness, and swelling of throat; difficult deglutition; face bloated, and about the colour of mahogany; the peculiar tingling remains in and below eyes. Ordered *Castor Oil*, *Opium*, and *Camphor*.

16th.—All symptoms rather better, except the heat and pain in bowels. Repeat medicines.

17th.—Better. Purple spots on body and arms; occasional faintness, and a prickly sensation in skin; numbness and pain in left arm and elbow; soreness and pungent pains about head; margin of tongue clean and bright red; pulse quick and feeble. Continue medicine, omitting the *Paregoric*.

18th.—Sitting up in bed, much better. At times palpitation, trembling at stomach, and faintness; pulse 94, stronger; some heat in stomach and bowels; pain and impaired sight of right eye. Ordered *Carbon* and *Castor Oil*.

19th.—Pretty well during day, but having no medicine, and but little nourishment, became more indisposed towards evening; had a slight rigor; pulse feeble and irregular; pain in jaws, teeth, left breast and thighs; some heat in stomach and numbness; mind gloomy, but not wandering; fears that more poison has been put into her barley water. Gave *Carbon*, *Opium*, and *Camphor*.

20th.—Much better; pains generally subsided; pulse 80; tongue cleaning; some heat in bowels.

21st.—Convalescent.

A daughter took a tablespoonful of the tea, she was affected much like her mother, and her face exhibited the same dark colour, but all her symptoms were lighter, and lasted only about forty-eight hours.

564. *New England Journal of Medicine and Surgery*, 1820, vol. ix, p. 146; 1822, vol. xi, p. 188; 1823, vol. xii, p. 319; 1824, vol. xiii, p. 99.

Various cases quoted, see above.

565. *Australian Medical Journal*, 1859, vol. iv, p. 268.

By Dr. Thomas N. Fitzgerald.

George Doran was brought to hospital at 6 p.m. having taken two ounces of *Arsenic* about three hours previously. He was perfectly sensible, but little pain, anxious and wild expression of countenance. His answers, on being asked why he had taken it, were evasive, his only reply, when closely pressed, being "He did not know." Pulse quick, manner very excited, a strong desire to go home. *Hydrated Peroxide of Iron* was given; vomiting soon became severe, and great pain extended over gastric region, which sensation, however, partially subsided for some hours. About 10 p.m. all the worst symptoms reappeared

with aggravated severity; his bowels acted, the fæces being clay-coloured, and passed with much tenesmus; stomach had become intensely irritable, with occasional ejections of a fluid which seemed to be a mixture of blood and mucus; violent spasms ensued, in one of which he died at 1 a.m.

Post mortem in fourteen hours. Intestines generally very much inflamed. Stomach contained about a pint of dark fluid; its mucous membrane was claret-coloured, interspersed with patches of a deep crimson hue; it was easily separated by the finger, and found ulcerated in some parts; the rugæ, in general, were badly marked. Œsophagus much inflamed at gastric extremity, and dark blood effused under the mucous membrane in patches, which gave the appearance of gangrenous spots. Œdema glottidis well-marked. Bladder firmly contracted, containing not a drop of urine. Rectum highly inflamed, with incipient ulceration. Right side of heart filled with coagulated blood, and left ventricle contracted. Brain and its membranes congested, cerebellum soft.

566. *Half-Yearly Abstract of Medical Sciences*, 1851, vol. xiii, pp. 333-9; 1845, vol. i, p. 380.

Various cases quoted, see above.

567. *London Medical Journal*, 1786, vol. vii, p. 192.

Reference to Thomas Fowler's *Medical Reports of the Effects of Arsenic in the Cure of Agues, &c.*, 1786; and to M. le Febure's *Remede approuvé pour guérir radicalement le cancer occulte et manifeste ou ulcéré*; also to Sir George Baker's paper in *Medical Transactions*, vol. iii, p. 157.

568. *London Medical Journal*, 1788, vol. ix, p. 48.

By Mr. J. C. Jenner.

An ague patient took twenty-five drops of *Fowler's Solution* at one dose, and it caused swelling of face. Another ague patient also took doses of twenty-five drops *ter die*, had griping and pains in bowels, with diarrhœa. In a case of periodical headache fifteen drops *ter die* caused slight nausea after the morning dose, and appetite became rather impaired.

